Sediment Trap Data from the Strait of Georgia, May, 1995, to January, 1999

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by

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ABSTRACT

O'Brien, M.C., M. Soon, B. Nielsen, C. Elliot, T. Juhasz, R.W. Macdonald, K.L. Denman, R.E. Thomson, and S.E. Calvert. 2000. Sediment Trap Data from the Strait of Georgia, May, 1995 to January, 1999. Can. Data Rep. Hydrogr. Ocean Sci. 155: 92 pp.

Sediment traps were deployed in four locations in the Strait of Georgia during the period May, 1995, to January, 1999. For the less than 500-micron portion of captured sediment, analysis were done for percent composition values of total carbon, organic carbon, total nitrogen, carbonate carbon, and biogenic silica as well as for stable isotopes of carbon and nitrogen. Fluxes for total dry weight, organic carbon, carbonate carbon, total nitrogen, and biogenic silica were calculated for each collection interval. Collection intervals varied from 8 to 20 days. There is a 3-year record from nine deployments from March, 1996, to January, 1999 for the 150-metre sediment trap at station GSCM3 which is located in the deep basin between Valdes Island and Sturgeon Bank. Also at station GSCM3, there is a 1- year record from February, 1998, to January, 1999, for traps deployed at 225 and 300 metres. At station GSCM2, located off Saturna Island and GSCM4 off Gabriola Island, there is a 2-year record from six deployments at 150 metres for March, 1996, to February, 1998. At station GS, also off Gabriola Island, there is a record from two trap deployed at 325 and 340 metres, respectively, from May, 1995, to April, 1996.

Key words: Strait of Georgia, sediment trap, carbon, nitrogen, biogenic silica, carbonate, carbon isotopes, nitrogen isotopes, flux.

RÉSUMÉ

O'Brien, M.C., M. Soon, B. Nielsen, C. Elliot, T. Juhasz, R.W. Macdonald, K.L. Denman, R.E. Thomson, S.E. Calvert. 2000. Sediment Trap Data from the Strait of Georgia, May, 1995 to January, 1999. Can. Data Rep. Hydrogr. Ocean Sci. **155**: 92 pp.

Des pièges à sédiments ont été déployés à quatre sites du détroit Georgia de mai, 1995, à janvier, 1999. Les particules de moins de 500 microns récoltées ont été analysées pour en déterminer la composition en pourcentage du carbone total, carbone organique, azote total, carbone sous forme de carbonate et silice biogénique, de même que la composition des isotopes stables du carbone et de l'azote. Les flux en poids sec total, carbone organique, carbone sous forme de carbonate, azote total et silice biogénique ont été calculés pour chacun des intervalles de temps entre les déploiements, ceux-ci variant entre 8 et 20 jours. Nous rapportons l'enregistrement de trois années de données pour neuf

déploiements de mars, 1996, à janvier, 1999, à 150 m de profondeur à la station GSCM3, laquelle est située dans le bassin profond entre l'île Valdes et le banc Sturgeon. Nous rapportons également, pour cette même station, l'enregistrement d'une année de données pour trois déploiements à 225 et 300 m de profondeur de février, 1998, à janvier, 1999. Pour les stations GSCM2 et GSCM4, respectivement situées au large des îles Saturna et Gabriola, nous rapportons l'enregistrement de deux années de données pour six déploiements à 150 m de de données pour deux déploiements à 325 et 340 m de profondeur de mai, 1995, à avril, 1996 à la station GS, également située au large de l'île Gabriola.

Mots clés: Détroit Georgia, piège à sédiments , carbone, azote, silice biogénique, carbonate, isotopes du carbone, isotopes de l'azote, flux.

ACKNOWLEDGMENTS

This work was funded by Fisheries and Oceans Canada as part of the program entitled "Study of factors influencing the marine survival of coho and chinook salmon in the Strait of Georgia." We are indebted to the officers and the crews of CCGS Vector and CCGS John P. Tully for their assistance in the deployments and recoveries of 27 moorings over the 3-year period of the study. Thanks to Patricia Kemer for preparing the mooring figures and to Charles Gobiel for assisting us by translating the abstract into French.

1. INTRODUCTION

As part of larger programs designed to study the transport of particles and factors influencing the marine survival of coho and chinook salmon, sediment traps were deployed in the central basin of the Strait of Georgia. The data will be used to assist in the determination of the timing of biological production and the timing and geographic extent of sinking particles from the Fraser River.

There is strong evidence of changes in the Strait of Georgia ecosystem and it has been hypothesized that these changes are associated with climatic changes as, for example, manifested in a warming trend in the waters of the Strait of Georgia. Comparisons of surface phytoplankton biomass and sediment trap materials will help to resolve the relationship between surface production and vertical transport of particles.

Sediment traps and current meters were deployed during the period from May, 1995, to January, 1999, at stations GS, GSCM2, GSCM3 and GSCM4. The data from the analysis of the trap material from the less than 500 micron portion is reported here with the exception of the microscopic analysis which will be reported elsewhere. The greater than 500 micron portion has been set aside for future analysis. The samples were sieved and subsampled at the Institute of Ocean Sciences and a portion was sent to the Department of Earth and Ocean Sciences at the University of British Columbia (UBC) for analysis. This report documents the analysis conducted by UBC and includes data for the percent composition values for total carbon, organic carbon, total nitrogen, carbonate carbon, and biogenic silica. Also reported are the flux data for the collection intervals including total dry weight flux, organic carbon flux, carbonate carbon flux, total nitrogen flux, and biogenic silica flux as well as the stable isotope data for carbon and nitrogen.

At station GSCM3, in the deep basin (408 metres) between Valdes Island and Sturgeon Bank, there is a 3-year continuous sediment trap record at 150 metres (March, 1996, to January, 1999) and a 1-year record at 225 and 300 metres (February, 1998, to January, 1999). At station GSCM2 off Saturna Island and GSCM4 off Gabriola Island, there is a 2-year continuous sediment trap record at 150 metres (March, 1996, to February, 1998). At station GS off Gabriola Island and not far from GSCM4 there is a continuous sediment trap record from two deployments (325 and 340 metres) from May, 1995, to April, 1996. Figure 1 shows the locations of the mooring stations.

Current meter records were collected at stations GSCM1, GSCM2, GSCM3, and GSCM4 to assist in the interpretation of the sediment trap data and are reported elsewhere. The depths of the current meters on the moorings are noted in Table 2. There were no current meters deployed on the moorings at

station GS. See Figures 3 and 4 for the mooring configurations at stations GSCM1, GSCM2, GSCM3, and GSCM4.

CTD/Rosette transects were done at the times of deployment and recovery of the moorings and Figure 2 shows the locations of these stations. Table 1b lists the cruise identifications and dates for the CTD/R work done in the Strait of Georgia during the period from January, 1996, to January, 1999. Water samples for dissolved oxygen, salinity, and nutrients (nitrate plus nitrite, silicate, and orthophosphate) were taken and analyzed during these cruises. The CTD and water chemistry data is reported elsewhere.

1.1 Overview of the field work

The sampling program consisted of the following operations:

- **Moorings deployed at four stations (GSCM1, GSCM2, GSCM3, and GSCM4) for a period of 2 years from March, 1996, to February, 1998.** See Figure 1 for a map of the station locations and Figure 3 for the mooring configurations. At each of the four sites, there were six deployments (A to F) of the moorings to cover the 2-year time period. The deployments were designated by the station name followed by a letter (e.g., GSCM3-A and GSCM3-B for the first and second deployments at GSCM3). The moorings at stations GSCM2, GSCM3 and GSCM4 in the central basin of the Strait of Georgia had Baker-type sediment traps at 150 metres with Aanderaa RCM4 current meters just below the traps as well as one or two additional current meters depending on the depth of the site. See Table 2 and Figure 3 for current meter depths on each mooring. The mooring at GSCM1 was located in Haro Strait and had current meters at 100 and 125 metres but no sediment trap. See Tables 1, 2, 3, and 4 for additional mooring details and information.

- **Moorings deployed at station GSCM3 for one year from February, 1998, to January, 1999.** There were three deployments made at GSCM3 for this period (deployments G, H, and I) and the moorings consisted of three Baker-type sediment traps at 150, 225, and 300 metres and five Aanderaa RCM4 current meters at 50, 151.65, 126.65, 301.65, and 330 metres. The sediment traps on the moorings were designated by the station name, followed by a letter designating the deployment (G,H, or I) and the depth of the trap (e.g., GSCM3-H-225). See Figure 4 for the mooring configuration and Tables 1, 2, 3, and 4 for mooring details.

- **Moorings deployed at station GS (close to station GSCM4) from May, 1995, to September, 1995, and again from October, 1995, to April, 1996.** This mooring consisted of a single Baker-type sediment trap at 325 metres for the first deployment and at approximately 340 metres for the second. The

deployments are designated GS1 and GS2. See Tables 1, 2, 3, and 4 for mooring information. There were no current meters deployed with this mooring. The sediment trap stalled on cup 5 at station GS1 and stayed there for the remainder of the deployment so that the interval for this cup was very long (81.75 days). The sample appeared intact on recovery but it is possible that there was some sample lost given that the cup had not closed.

2. FIELD SAMPLING METHODS AND EQUIPMENT

Baker-type sediment traps were used on the moorings (see Figure 4). A brief description of the trap, deployment and recovery details, and a chain of custody up to and including sample splitting is described below.

2.1 Baker sequential sediment traps and preparations for deployment

The Baker trap shown in Figure 5 is a 1-metre long, 220-cm ID pvc tube that houses an asymmetrical polyethylene funnel (Baker and Milburn 1983). The gravitationally settling particles in the water column are collected *via* the funnel into one of ten 200 mL acrylic sample tubes. The collection area of the Baker trap is 0.032 m^2. The bottles are rotated into position at time intervals determined by switch settings on the timer electronics board. The traps were set up with a delay long enough that the carousel does not rotate to the first position until the mooring is deployed and settled in place. The moorings were deployed top first, anchor last. The time intervals were set so that the collection intervals at stations GSCM2, GSCM3, and GSCM4 were the same. The collection intervals varied from 8 days to 20 days depending on the cruise logistics.

In preparation for deployment, the sample tubes and carousels were soaked in a RBS bath (20 mL RBS concentrate per litre of water) overnight, rinsed well with warm tap water, soaked in a 1 N HCl bath for 4 hours, rinsed with double run Milli-Q water, and air dried. To inhibit bacterial growth and to create a density gradient, 200 mg $HgCl_2$ and 2 g NaCl were added to each sample tube for deployments A to F at stations GSCM2, GSCM3, and GSCM4. The final concentration of $HgCl_2$ in these tubes was 1 g/L. A high purity grade of NaCl (Suprapur) was used. For the last deployments at station GSCM3 (GSCM3-150, GSCM3-225, and GSCM3-300 for deployments G, H and I), the amount of $HgCl_2$ was reduced slightly and added to the tubes dissolved in double run Milli-Q water. The final concentration was 0.75 g/L (3 mL of a 50 mg/mL solution was added to each tube along with the 2 grams of NaCl). For station GS, sodium azide was used as the preservative, but no record was kept of the amount added or how much NaCl was added to the tubes. After the addition of the preservative, the tubes were filled with sea water collected at the depth at which the trap was to be deployed.

The deployment and recovery dates and times are listed in Tables 1 to 4 along with the station location, cruise identification, collection intervals, trap settings, sample preservation, notes on trap recoveries, and current meter depths.

3. SAMPLE HANDLING AND ANALYTICAL METHODS

On retrieval, the traps were covered and kept cool until they could be dismantled and the samples transferred to a cooler. Onboard, the samples were wet-sieved through a 500 micron Nitex or polypropylene sieve using the supernatant liquid or filtered sea water where necessary. The less than 500 micron portion was transferred to a 250-mL wide mouth polybottle (acid cleaned overnight in 1N HCl and rinsed with double Milli-Q water) and stored in the dark at 4 degrees Centigrade. The greater than 500 micron fraction was transferred to an acid- cleaned scintillation vial and stored at 4 degrees Centrigrade in a portion of the supernatant. The samples were brought back to the laboratory at the Institute of Ocean Sciences for subsampling and analysis as described below.

3.1 Subsampling

In the lab at the Institute of Ocean Sciences, the less than 500-micron samples were split into four equal portions using a rotary splitter. Two of these portions were recombined into the original 250-mL bottle and sent as a wet sample to the Department of Earth and Ocean Sciences at the University of British Columbia. One-quarter of the sample was set aside as a wet sample for future contaminant analysis. The remaining quarter was set aside for possible metal analysis and for archival purposes. Before splitting, a sample of the supernatant was sampled into an acid cleaned, polycarbonate test tube or 15 mL polybottle and stored at 4 degrees Centigrade. Where possible, only the supernatant was used in the splitting process. The samples from station GSCM2 were often larger, and when necessary, filtered sea water was used to complete the splitting. See Figure 6 for a schematic of the sample splitting.

3.2 Total dry weight flux

After splitting the main <500 micron sample into four subsamples, two of the subsamples were combined to one portion comprising one-half of the total. This was sent as a wet sample in the original 250-mL polybottle or in a plastic cup to the lab at the Department for Earth and Ocean Sciences at the University

of British Columbia. At UBC, the trap samples were prepared for analysis by removing sea salt by washing and centrifugation with distilled de-ionized water. After rinsing, the samples were freeze-dried and gently disaggregated in an agate mortar and pestle, and transferred to a clean plastic vial. The total weight of the sediment collected was determined by multiplying by 2 to represent the total sample. The dried sample was used for the total carbon, total nitrogen, carbonate carbon, biogenic silica, $\delta^{13}C_{organic}$, and $\delta^{15}N_{total}$ analysis.

The total dry weight flux was determined as follows:

$$F = W/(A \times I) \quad (1)$$

where

F = Total dry weight flux
W = Total weight of sample in grams
A = Collection area of the Baker trap funnel (0.032 m^2)
I = Collection interval in days.

3.3 Total carbon, organic carbon, total nitrogen, and carbonate analysis

Total carbon, total nitrogen, and carbonate analysis were performed in the laboratory at the Department of Earth and Ocean Sciences at the University of British Columbia. Total carbon and nitrogen were determined by combustion/gas chromatography using a Carlo Erba CHN analyzer (Verardo et al. 1990; King et al. 1998). Carbonate carbon was separately determined by acid evolution of CO2 and quantification using a UIC coulometer (Huffman 1977; Johnson et al. 1993). Organic carbon was obtained by subtracting the carbonate carbon from the total carbon. The precision of the analyses was ±3% for organic C, carbonate C, and nitrogen.

For total nitrogen (0.089 to 2.260%) the pooled standard deviation (s_p) was 0.021% for 33 pairs. For total carbon (0.832 to 19.109%) s_p was 0.094% for 33 pairs. For organic carbon (0.708 to 19.068%) s_p was 0.114% for 33 pairs.

For carbonate carbon (0.001 to 0.930%) s_p was 0.013% for 36 pairs. See Tables 5 and 6 for a data summary. See Tables 7 and 8 for the values of the individual replicates. The data reported in Appendix 1 reports the first replicate value and is not an average of the two values. The fluxes are also calculated using the first replicate values.

3.4 Biogenic silica analysis

The analysis was performed in the laboratory at the Department of Earth and Ocean Sciences at the University of British Columbia. Biogenic silica was determined following the method and equations of (Mortlock and Froelich 1989). The method consists of extracting amorphous silica from a sediment sample with 2M Na_2CO_3 and then measuring the dissolved silicon concentration in the extract by molybdate-blue spectrophotometry.

There were 31 samples run in duplicate and the pooled standard deviation s_p is 0.573% for biogenic silica (range 1.579 to 28.056%). See Tables 5 and 6 for a data summary and Table 9 for the values of the individual replicates. The data reported in Appendix 1 reports the first replicate value and is not an average of the two values.

3.5 Carbon and nitrogen isotope analysis

The analysis was performed in the laboratory at the Department for Earth and Ocean Sciences at the University of British Columbia. The isotopic composition of organic carbon ($\delta^{13}C_{organic}$) was determined on decarbonated (10% HCl) subsamples using a VG PRISM isotope ratio mass spectrometer, with a Carlo Erba CHN analyzer fitted in-line as the gas preparation device (Calvert et al. 1995). The isotopic data for organic carbon are reported in the conventional δ-notation (equation 2) with respect to the PDB standard. Precision was ±0.2 ppt. $\delta^{15}N_{total}$ values were determined on a second set of untreated subsamples using the same CHN-PRISM setup (Waser, et al. 1998; Waser et al. 1998). The results are reported relative to air N_2 (equation 3) and the precision was ±0.3 ppt.

The isotopic composition of organic carbon is measured relative to the PDB (Pee Dee Belemnite) standard and is reported as follows:

$$\delta^{13}C_{organic} = \left(\frac{(^{13}C/^{15}C)_{sample}}{(^{13}C/^{15}C)_{standard}} - 1 \right) \times 1000 \qquad (2)$$

The isotopic composition of total nitrogen is referenced to air and is reported as follows:

$$\delta^{15}N_{total} = \left(\frac{(^{15}N/^{14}N)_{sample}}{(^{15}N/^{14}N)_{standard}} - 1 \right) \times 1000 \qquad (3)$$

The pooled standard deviation (s_p) for $\delta^{13}C_{organic}$ (-24.2 to -19.4) is 0.064 ppt for 24 duplicate pairs and for $\delta^{15}N_{total}$ (3.54 to 9.18), s_p is 0.149 ppt for 26 duplicate pairs. See Table 6 for a summary and Table 10 for the values of the individual

replicates for the carbon isotope analysis. Table 11 reports the values of the individual replicates for the nitrogen isotope analysis. The data reported in Appendix 1 reports the first replicate value and is not an average of the two values.

3.6 Quality control procedures

The precision of the methods used was estimated by analyzing replicates and is expressed as the pooled standard deviation s_p, which is calculated as

$$s_p = \sqrt{\frac{\sum \nu_i s_i^2}{\sum \nu_i}} \quad \text{or} \quad s_p = \sqrt{\frac{\sum d_i^2}{2k}} \tag{4}$$

where $\nu_i = n_i - 1$ degrees of freedom, and the n_i and s_i, refer to the number of replicates and their standard deviation for the individual components used in the pooled standard deviation calculation. In most cases, the replicate data consists of k duplicates, and d_i is defined as the difference between duplicates. Table 5 summarizes the pooled standard deviations calculated for the analysis reported here.

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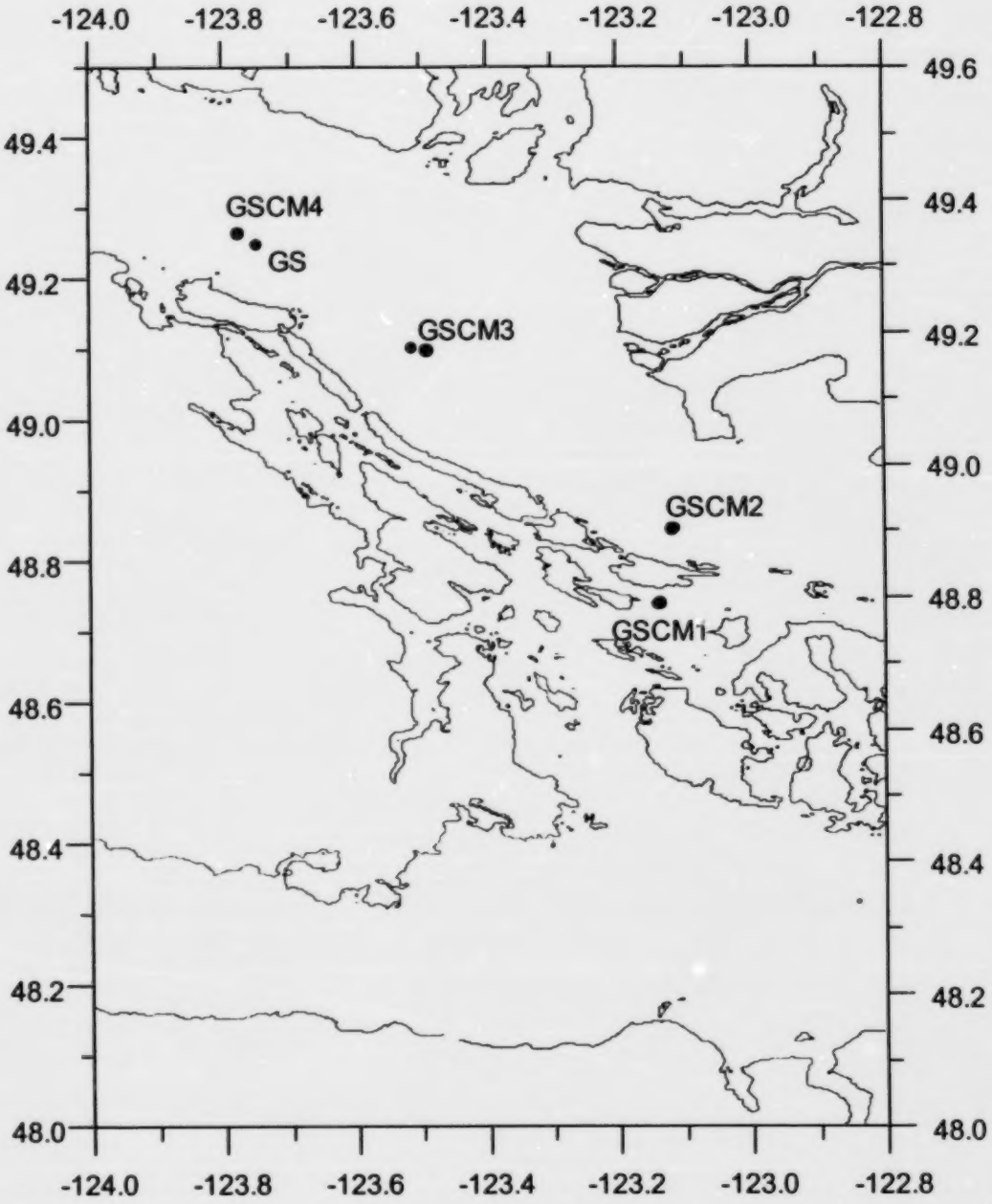

Figure 1. Strait of Georgia mooring locations.

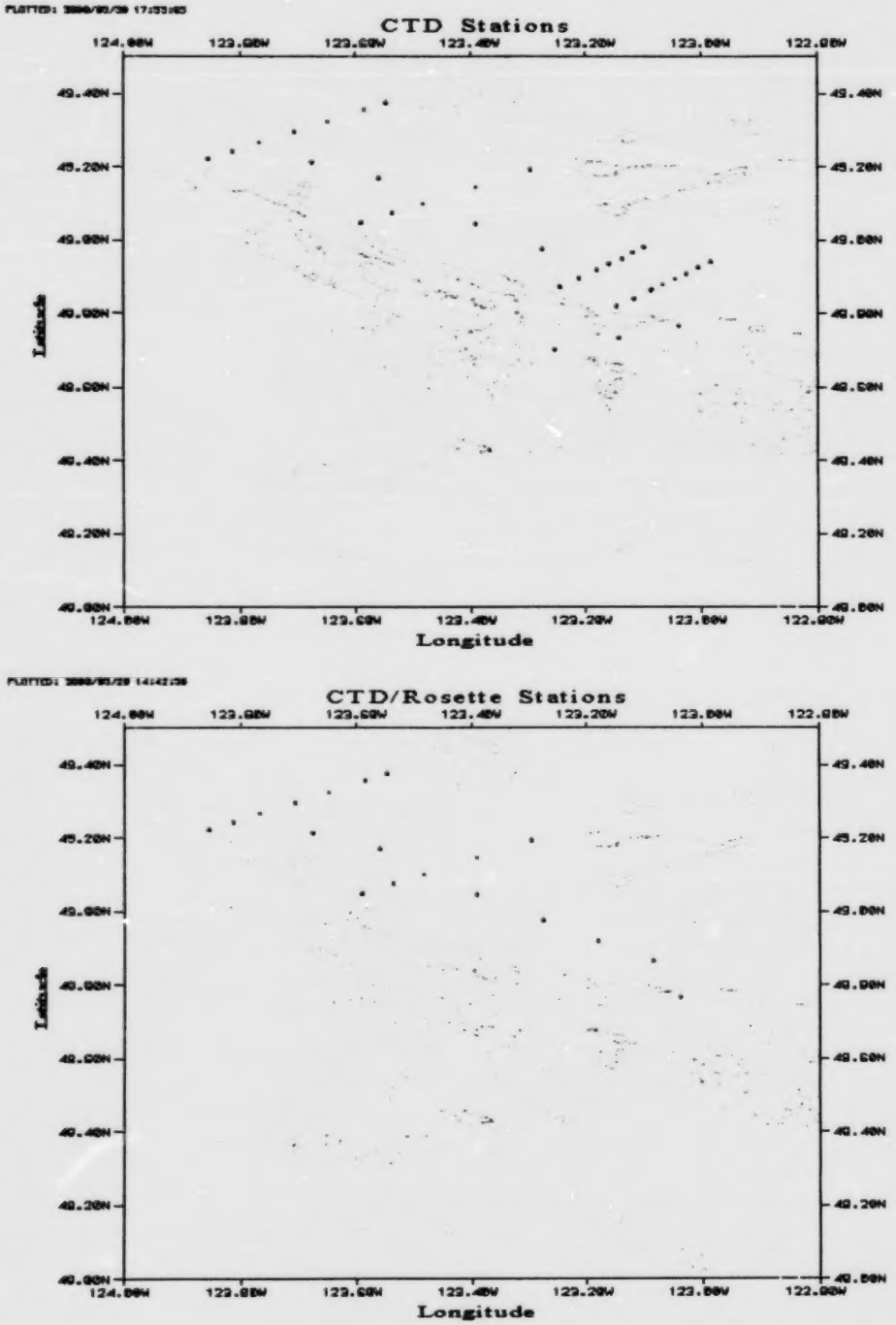

Figure 2. Strait of Georgia CTD and CTD/Rosette stations.

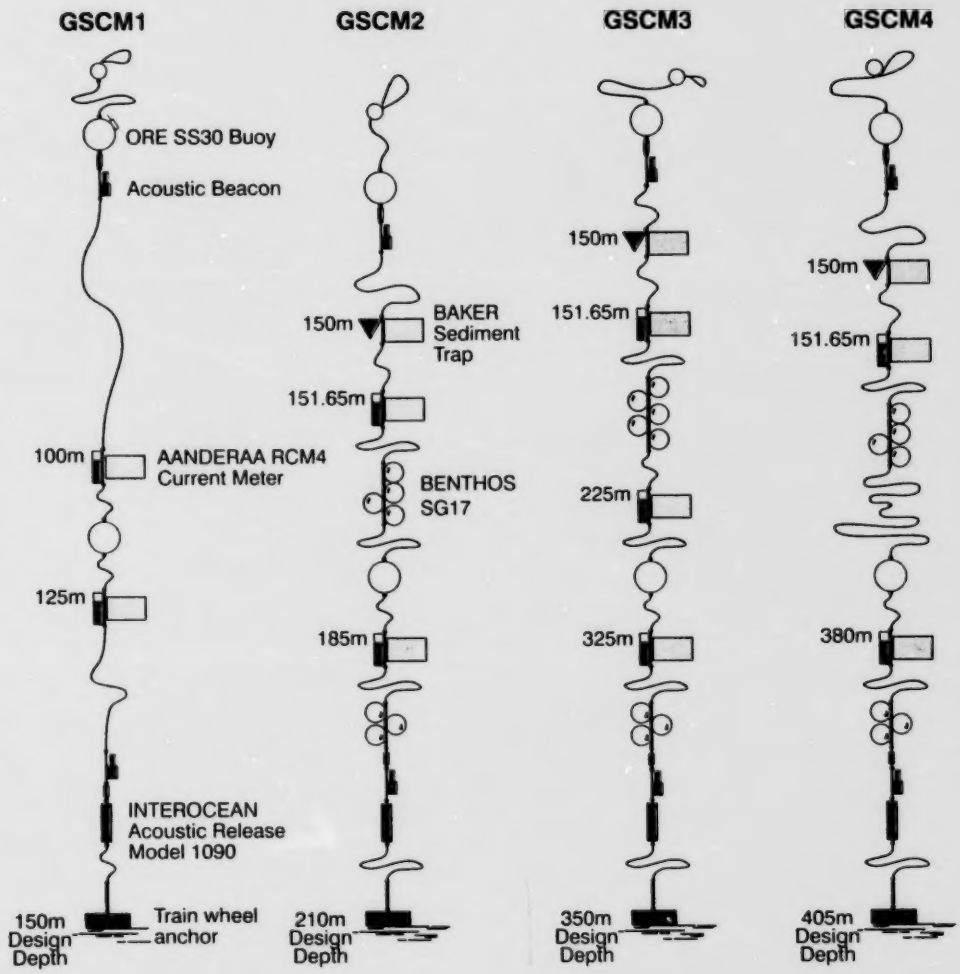

Figure 3. Mooring layouts for stations GSCM1, GSCM2, GSCM3, and GSCM4 (deployments A to F).

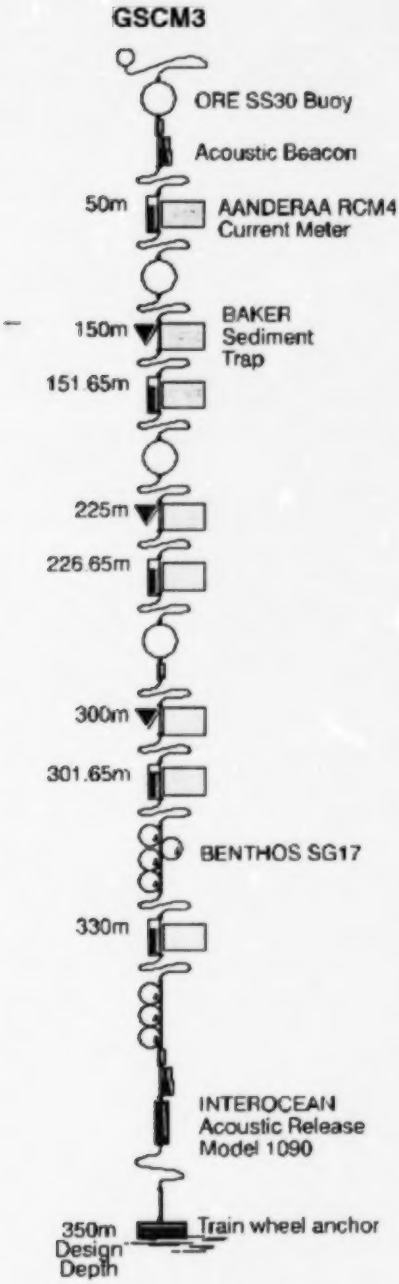

Figure 4. Mooring layout for station GSCM3 (deployments G,H, and I).

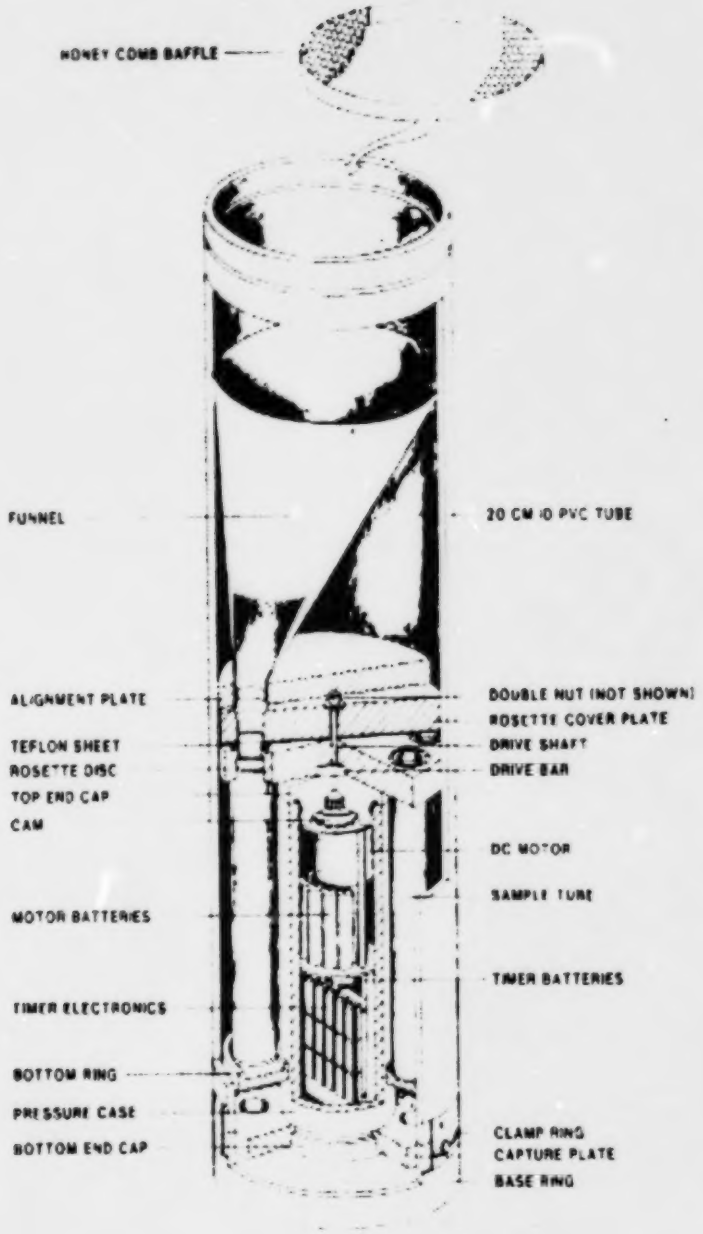

Figure 5. Baker sequential sediment trap.

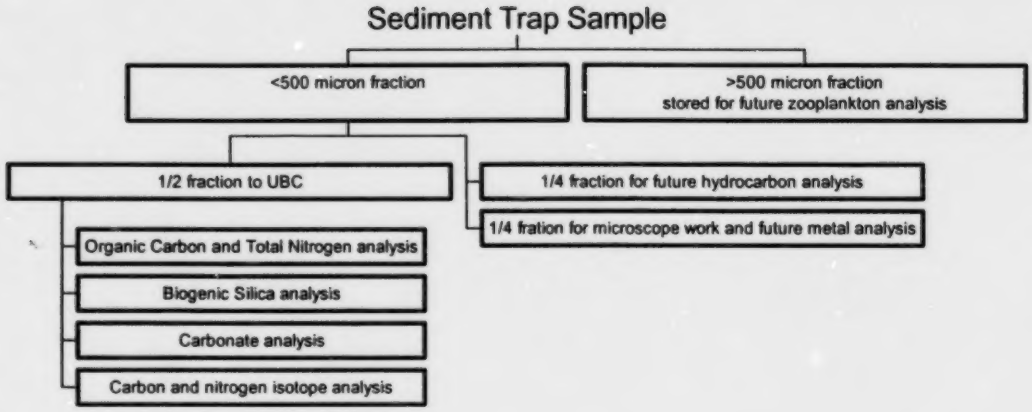
Sediment Trap Sample
<500 micron fraction
>500 micron fraction
stored for future zooplankton analysis
1/2 fraction to UBC
1/4 fraction for future hydrocarbon analysis
1/4 fration for microscope work and future metal analysis
Organic Carbon and Total Nitrogen analysis
Biogenic Silica analysis
Carbonate analysis
Carbon and nitrogen isotope analysis

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Table 1a. Mooring station information.

Trap #	Station	Deployment Cruise # (Vessel)	Recovery Cruise # (Vessel)	Latitude	Longitude	Bottom Depth (metres)	Launch date/time (Anchor released)	Date/time recovered
1	GS1	(Tully)	(R.B. Young)	49 15.00 N	123 45.00 W	400	May 10/95 (1600 GMT)	Sept 13/95 (1800 ???)
2	GS2	(Vector)	(R.B. Young)	49 15.04 N	123 45.00 W	405	Sep 27/95 (1845 GMT)	Apr 10/96 (1910 GMT)
3	GSCM1-A	9603 (Vector)	9611 (Vector)	48 44.470 N	123 08.376 W	150	Feb 29/96 (1121 PST)	Jun 17/96 (1521 PST)
4	GSCM2-A	9603 (Vector)	9611 (Vector)	48 50.852 N	123 07.044 W	210	Feb 29/96 (0942 PST)	Jun 19/96 (1330 PST)
5	GSCM3-A	9603 (Vector)	9611 (Vector)	49 06.025 N	123 29.564 W	350	Feb 27/96 (1038 PST)	Jun 17/96 (1835 PST)
6	GSCM4-A	9603 (Vector)	9611 (Vector)	49 16.006 N	123 46.493 W	408	Feb 28/96 (1034 PST)	Jun 18/96 (0706 PST)
7	GSCM1-B	9611 (Vector)	9636 (Vector)	48 44.468 N	123 08.455 W	147	June 20/96 (1219 PST)	Sept 9/96 (1418 PST)
8	GSCM2-B	9611 (Vector)	9636 (Vector)	48 50.825 N	123 07.124 W	207	June 20/96 (0944 PST)	Sept 9/96 (1553 PST)
9	GSCM3-B	9611 (Vector)	9636 (Vector)	49 05.989 N	123 29.474 W	348	June 19/96 (0938 PST)	Sept 11/96 (0709 PST)
10	GSCM4-B	9611 (Vector)	9636 (Vector)	49 15.990 N	123 46.478 W	408	June 18/96 (1146 PST)	Sept 10/96 (0705 PST)
11	GSCM1-C	9636 (Vector)	9703 (Vector)	48 44.461 N	123 08.530 W	156	Sept 12/96 (0953 PST)	Feb 17/97 (1630 PST)
12	GSCM2-C	9636 (Vector)	9703 (Vector)	48 50.816 N	123 07.208 W	215.5	Sept 12/96 (0821 PST)	Feb 20/97 (0812 PST)
13	GSCM3-C	9636 (Vector)	9703 (Vector)	49 05.981 N	123 29.550 W	341.6	Sept 11/96 (1047 PST)	Feb 18/97 (1318 PST)
14	GSCM4-C	9636 (Vector)	9703 (Vector)	49 15.997 N	123 46.572 W	408.1	Sept 10/96 (1025 PST)	Feb 18/97 (0811 PST)
15	GSCM1-D	9703 (Vector)	9725 (Vector)	48 44.425 N	123 08.591 W	158	Feb 20/97 (1631 PST)	May 27/97 (1252 PST)
16	GSCM2-D	9703 (Vector)	9725 (Vector)	48 50.803 N	123 07.283 W	215	Feb 20/97 (1130 PST)	May 27/97 (1450 PST)
17	GSCM3-D	9703 (Vector)	9725 (Vector)	49 06.028 N	123 29.513 W	365	Feb 18/97 (1640 PST)	May 29/97 (1725 PST)
18	GSCM4-D	9703 (Vector)	9725 (Vector)	49 15.951 N	123 46.690 W	417	Feb 18/97 (1128 PST)	May 28/97 (0710 PST)
19	GSCM1-E	9725 (Vector)	9742 (Tully)	48 44.459 N	123 08.363 W	150	May 29/97 (0831 PST)	Oct 5/97 (0705 PST)
20	GSCM2-E	9725 (Vector)	9742 (Tully)	48 50.855 N	123 07.049 W	209	May 29/97 (1211 PST)	Oct 5/97 (1230 PST)
21	GSCM3-E	9725 (Vector)	9742(Tully)	49 06.025 N	123 29.564 W	344	May 28/97 (1541 PDT)	Oct 4/97 (1215 PDT)
22	GSCM4-E	9725 (Vector)	9742 (Tully)	49 16.006 N	123 46.656 W	408	May 28/97 (1249 PST)	Oct 4/97 (0645 PST)

Table 1a (continued).

Trap #	Station	Deployment Cruise # (Vessel)	Recovery Cruise # (Vessel)	Latitude	Longitude	Bottom Depth (metres)	Launch date/time (Anchor released)	Date/time recovered
23	GSCM1-F	9742 (Tully)	9805 (Vector)	48 44.495 N	123 08.365 W	151	Oct 5/97 (0915 PST)	Feb 13/98 (0740 PST)
24	GSCM2-F	9742 (Tully)	9805 (Vector)	48 50.868 N	123 07.035 W	208	Oct 5/97 (1500 PST)	Feb 13/98 (0914 PST)
25	GSCM3-F	9742 (Tully)	9805 (Vector)	49 05.980 N	123 29.536 W	348	Oct 4/97 (1541 PST)	Feb 11//98 (0843 PST)
26	GSCM4-F	9742 (Tully)	9805 (Vector)	49 15.986 N	123 46.635 W	408	Oct 4/97 (1016 PST)	Feb 11/98 (1104 PST)
27	GSCM3-G-150	9805 (Vector)	9811 (Tully)	49 6.092 N	123 29.728 W	348	Feb 12/98 1455 PST	May 31/98 13:25 PDT
28	GSCM3-G-225	9805 (Vector)	9811 (Tully)	49 6.092 N	123 29.728 W	348	Feb 12/98 1455 PST	May 31/98 13:25 PDT
29	GSCM3-G-300	9805 (Vector)	9811 (Tully)	49 6.092 N	123 29.728 W	348	Feb 12/98 1455 PST	May 31/98 13:25 PDT
30	GSCM3-H-150	9811 (Tully)	9835 (Tully)	49 06.090 N	123 29.723 W	344	May 31/98 1610 PST	Oct 3/98 0753 PDT
31	GSCM3-H-225	9811 (Tully)	9836 (Tully)	49 06.090 N	123 29.723 W	344	May 31/98 1610 PST	Oct 3/98 0753 PDT
32	GSCM3-H-300	9811 (Tully)	9837 (Tully)	49 06.090 N	123 29.723 W	344	May 31/98 1610 PST	Oct 3/98 0753 PDT
33	GSCM3-I-150	9837 (Tully)	9905 (Tully)	49 06.255 N	123 30.952 W	351	Oct 3/98 1219 PST	Jan 24/99 12:30 PST
34	GSCM3-I-225	9837 (Tully)	9905 (Tully)	49 06.255 N	123 30.952 W	351	Oct 3/98 1219 PST	May 26/99 10:15 PDT
35	GSCM3-I-300	9837 (Tully)	9905 (Tully)	49 06.255 N	123 30.952 W	351	Oct 3/98 1219 PST	May 26/99 10:15 PDT

Table 1b. Cruise identification for CTD and CTD/R casts in the Strait of Georgia.

Cruise identification number	Start date	Finish date	Vessel
9603	26-Feb-96	01-Mar-96	Vector
9611	17-Jun-96	21-Jun-96	Vector
9636	09-Sep-96	13-Sep-96	Vector
9703	17-Feb-97	24-Feb-97	Vector
9725	26-May-97	30-May-97	Vector
9738	06-Oct-87	12-Oct-97	Vector
9742	22-Sep-97	05-Oct-97	Tully
9805	09-Feb-98	12-Feb-98	Vector
9811	25-May-98	31-May-98	Tully
9814	01-Jun-98	19-Jun-98	Vector
9822	04-Sep-98	19-Sep-98	Vector
9835	21-Sep-98	05-Oct-98	Tully
9836	06-Oct-98	19-Oct-98	Tully
9839	16-Nov-98	28-Nov-98	Tully
9906	21-Jan-99	25-Jan-99	Tully
(GS1)	01-Sep-95	see note below	
(GS2)	01-May-96	see note below	

Note : Samples from GS1 and GS2 were collected by Dr. C.S. Wong and and were kindly donated to this project. Information on the cruises is not available.

Table 2. Mooring and sediment trap information.

Trap #	Station	Trap depth (metres)	CM depths (metres)	# of CM	Trap type	Trap serial number	Fin serial number	Trap on - date/time	Delay (hours)	Delay setting	Interval (days)	Interval setting	See note in Table 4
1	GS1	325	no CM	0	Baker	31533	?	May 5/95 (1600 GMT)	176	87	10.5	251	1
2	GS2	approx 340	no CM	0	Baker	31533	?	?	?	?	20	479	2
3	GSCM1-A	no trap	100, 125	2	no trap								3
4	GSCM2-A	150	151, 185	2	Baker	86090C	F1	Feb 26/96 (1600 PST)	152	75	10.5	251	4
5	GSCM3-A	150	151, 225, 325	3	Baker	86090B	F3	Feb 26/96 (1600 PST)	152	75	10.5	251	5
6	GSCM4-A	150	151, 380	2	Baker	87302B	F2	Feb 26/96 (1600 PST)	152	75	10.5	251	6
7	GSCM1-B	no trap	100, 125	2	no trap								7
8	GSCM2-B	150	151, 185	2	Baker	87302A	F2	June 17/96 (1600 PDT)	80	39	8	191	8
9	GSCM3-B	150	151, 225, 325	3	Baker	718106	718106	June 17/96 (1600 PDT)	80	39	8	191	9
10	GSCM4-B	150	151, 325	2	Baker	718105	718105	June 17/96 (1600 PDT)	80	39	8	191	10
11	GSCM1-C	no trap	100, 125	2	no trap								11
12	GSCM2-C	150.0	151.65, 185	2	Baker	86090C	F1	Sept 9/96 (1600 PDT)	80	39	15.75	377	12
13	GSCM3-C	150.0	151, 225, 325	3	Baker	86090B	87302A	Sept 9/96 (1600 PDT)	80	39	15.75	377	13
14	GSCM4-C	150.0	150.65, 325	2	Baker	87302B	F3	Sept 9/96 (1600 PDT)	80	39	15.75	377	14
15	GSCM1-D	no trap	107.9, 132.9	2	no trap								15
16	GSCM2-D	155	157, 190	2	Baker	87302A	F2	Feb 13/97 (1000 PST)	194	96	9.375	224	16
17	GSCM3-D	165	167, 240, 340	3	Baker	718106	718106	Feb 13/97 (1000 PST)	194	96	9.375	224	17
18	GSCM4-D	162	164.3, 392.3	2	Baker	718105	718105	Feb 13/97 (1000 PST)	194	96	9.375	224	18
19	GSCM1-E	no trap	100, 125	2	no trap								19
20	GSCM2-E	149	151, 184	2	Baker	86090C	F1	May 23/97 (1400 PDT)	178	88	12.5	299	20
21	GSCM3-E	144	146, 219, 319	3	Baker	86090B	F3	May 23/97 (1400 PDT)	178	88	12.5	299	21
22	GSCM4-E	153	155, 383	2	Baker	87302B	87302A	May 23/97 (1400 PDT)	178	88	12.5	299	22

Table 2 (continued).

Trap #	Station	Trap depth (metres)	CM depths (metres)	# of CM	Trap type	Trap serial number	Fin serial number	Trap on - date/time	Delay (hours)	Delay setting	Interval (days)	Interval setting	See note in Table 4
23	GSCM1-F	no trap	101, 126	2	no trap								23
24	GSCM2-F	148	150, 183	2	Baker	87302A	F2	Oct 1/97 (1600 PST)	104	51	12.75	305	24
25	GSCM3-F	148	150, 223, 323	3	Baker	718106	718106	Oct 1/97 (1600 PST)	104	51	12.75	305	25
26	GSCM4-F	153	155, 383	2	Baker	718105	718105	Oct 1/97 (1600 PST)	104	51	12.75	305	26
27	GSCM3-G-150	148	48, 149.65, 224.65, 299.65, 328	5	Baker	87302B	87302A	Feb 5/98 16:00 PDT	200	99	10.75	257	27
28	GSCM3-G-225	223			Baker	86090C	F1	Feb 5/98 16:00 PDT	200	99	10.75	257	28
29	GSCM3-G-300	298			Baker	86090B	F3	Feb 5/98 16:00 PDT	200	99	10.75	257	29
30	GSCM3-H-150	146	42, 145.65, 220.65, 295.65, 324	5	Baker	718105	718105	May 27/98 1400 PDT	130	64	12.25	293	30
31	GSCM3-H-225	219			Baker	718106	718106	May 27/98 1400 PDT	130	64	12.25	293	31
32	GSCM3-H-300	294			Baker	87302A	F2	May 27/98 1400 PDT	130	64	12.25	293	32
33	GSCM3-I-150	151	51, 153, 228, 303, 331	5	Baker	87302B	87302A	Oct 1/98 1400 PDT	58	28	10.75	257	33
34	GSCM3-I-225	226			Baker	86090C	F1	Oct 1/98 1400 PDT	58	28	10.75	257	34
35	GSCM3-I-300	301			Baker	86090B	F3	Oct 1/98 1400 PDT	58	28	10.75	257	35

Table 3. Timing of sequential traps and sample preservation.

Trap #	Station	Start interval #1	End interval #10 - Planned	End interval #10 - Actual	Preservative added	NaCl added	See note # in Table 4
1	GS1	May 13/95 (0000 GMT)	Aug 26/95 (0000 GMT)	Recovered on cup #5	Sodium Azide	?	1
2	GS2	Oct 2/95 (0000 GMT)	Apr 19/96 (0000GMT)	Apr 10/96 (1910 GMT)	Sodium Azide	?	2
3	GSCM1-A						
4	GSCM2-A	Mar 4/96 (0000 PST)	Jun 17/96 (0000 PST)	Jun 17/96 (0000 PST)	200 mg $HgCl_2$ per tube	2 gm NaCl per	3
5	GSCM3-A	Mar 4/96 (0000 PST)	Jun 17/96 (0000 PST)	Jun 17/96 (0000 PST)	200 mg $HgCl_2$ per tube	2 gm NaCl per	4
6	GSCM4-A	Mar 4/96 (0000 PST)	Jun 17/96 (0000 PST)	Jun 17/96 (0000 PST)	200 mg $HgCl_2$ per tube	2 gm NaCl per	5
7	GSCM1-B						
8	GSCM2-B	Jun 21/96 (0000 PDT)	Sept 9/96 (0000 PDT)	Stopped between 9 & 10	200 mg $HgCl_2$ per tube	2 gm NaCl per	6
9	GSCM3-B	Jun 21/96 (0000 PDT)	Sept 9/96 (0000 PDT)	Recovered on cup 8	200 mg $HgCl_2$ per tube	2 gm NaCl per	7
10	GSCM4-B	Jun 21/96 (0000 PDT)	Sept 9/96 (0000 PDT)	Sept 9/96 (0000 PDT)	200 mg $HgCl_2$ per tube	2 gm NaCl per	8
11	GSCM1-C						
12	GSCM2-C	Sept 13/96 (0000 PDT)	Feb 17/97 (1200 PDT)	Feb 17/97 (1200 PDT)	200 mg $HgCl_2$ per tube	2 gm NaCl per	9
13	GSCM3-C	Sept 13/96 (0000 PDT)	Feb 17/97 (1200 PDT)	Feb 17/97 (1200 PDT)	200 mg $HgCl_2$ per tube	2 gm NaCl per	10
14	GSCM4-C	Sept 13/96 (0000 PDT)	Feb 17/97 (1200 PDT)	Feb 17/97 (1200 PDT)	200 mg $HgCl_2$ per tube	2 gm NaCl per	11
15	GSCM1-D						
16	GSCM2-D	Feb 21/97 (1200 PST)	May 26/97 (0600 PST)	May 26/97 (0600 PST)	200 mg $HgCl_2$ per tube	2 gm NaCl per	12
17	GSCM3-D	Feb 21/97 (1200 PST)	May 26/97 (0600 PST)	May 26/97 (0600 PST)	200 mg $HgCl_2$ per tube	2 gm NaCl per	13
18	GSCM4-D	Feb 21/97 (1200 PST)	May 26/97 (0600 PST)	May 26/97 (0600 PST)	200 mg $HgCl_2$ per tube	2 gm NaCl per	14
19	GSCM1-E						
20	GSCM2-E	May 31/97 (0000 PDT)	Oct 3/97 (0000 PDT)	Oct 3/97 (0000 PDT)	200 mg $HgCl_2$ per tube	2 gm NaCl per	15
21	GSCM3-E	May 31/97 (0000 PDT)	Oct 3/97 (0000 PDT)	Oct 3/97 (0000 PDT)	200 mg $HgCl_2$ per tube	2 gm NaCl per	16
22	GSCM4-E	May 31/97 (0000 PDT)	Oct 3/97 (0000 PDT)	Oct 3/97 (0000 PDT)	200 mg $HgCl_2$ per tube	2 gm NaCl per	17

Table 3 (continued).

Trap #	Station	Start interval #1	End interval #10 - Planned	End interval #10 - Actual	Preservative added	NaCl added	See note # in Table 4
23	GSCM1-F						
24	GSCM2-F	Oct 6/97 (0000 PST)	Feb 10/98 (1200 PST)	Feb 10/98 (1200 PST)	200 mg $HgCl_2$ per tube	2 gm NaCl per	18
25	GSCM3-F	Oct 6/97 (0000 PST)	Feb 10/98 (1200 PST)	Feb 10/98 (1200 PST)	200 mg $HgCl_2$ per tube	2 gm NaCl per	19
26	GSCM4-F	Oct 6/97 (0000 PST)	Feb 10/98 (1200 PST)	Feb 10/98 (1200 PST)	200 mg $HgCl_2$ per tube	2 gm NaCl per	20
27	GSCM3-G-150	Feb 14/98 00:00 PDT	Jun 1/98 12:00 PDT	May 31/98 13:25 PDT	3ml X 50mg/ml solution $HgCl_2$	2 gm NaCl per	21
28	GSCM3-G-225	Feb 14/98 00:00 PDT	Jun 1/98 12:00 PDT	May 31/98 13:25 PDT	3ml X 50mg/ml solution $HgCl_2$	2 gm NaCl per	22
29	GSCM3-G-300	Feb 14/98 00:00 PDT	Jun 1/98 12:00 PDT	May 31/98 13:25 PDT	3ml X 50mg/ml solution $HgCl_2$	2 gm NaCl per	23
30	GSCM3-H-150	June 2/98 0000 PDT	Oct 2/98 1200 PDT	Oct 2/98 1200 PDT	3ml X 50mg/ml solution $HgCl_2$	2 gm NaCl per	24
31	GSCM3-H-225	June 2/98 0000 PDT	Oct 2/98 1200 PDT	Oct 2/98 1200 PDT	3ml X 50mg/ml solution $HgCl_2$	2 gm NaCl per	25
32	GSCM3-H-300	June 2/98 0000 PDT	Oct 2/98 1200 PDT	Oct 2/98 1200 PDT	3ml X 50mg/ml solution $HgCl_2$	2 gm NaCl per	26
33	GSCM3-I-150	Oct 4/98 0000 PDT	Jan 19/99 1200 PDT	Jan 19/99 1200 PDT	3ml X 50mg/ml solution $HgCl_2$	2 gm NaCl per	27
34	GSCM3-I-225	Oct 4/98 0000 PDT	Jan 19/99 1200 PDT	Jan 19/99 1200 PDT	3ml X 50mg/ml solution $HgCl_2$	2 gm NaCl per	28
35	GSCM3-I-300	Oct 4/98 0000 PDT	Jan 19/99 1200 PDT	Jan 19/99 1200 PDT	3ml X 50mg/ml solution $HgCl_2$	2 gm NaCl per	29

Table 4. Notes on the sediment trap deployments.

Trap #	Station	Notes :
1	GS1	Trap was on cup #5 on recovery. It appears that everything worked normally up to this time then the electronics battery failed.
2	GS2	Cup#10 - collection time of 11.8 days. The trap was on cup#10 on recovery. Trap was turned to zero position ASAP with magnet. Sample#10 appeared to be intact although small amount of sediment was seen flushing from the trap on recovery.
3	GSCM1-A	No trap.
4	GSCM2-A	Trap worked properly.
5	GSCM3-A	Trap worked properly.
6	GSCM4-A	Trap worked properly.
7	GSCM1-B	No trap.
8	GSCM2-B	Trap covered with sediment and growth on recovery. Recovered with funnel positioned between cups 9 and 10. Sediment seen streaming from trap on recovery, probably from cup 10 but may be some loss from cup 9 too. Cup 9 did not look disturbed.
9	GSCM3-B	Recovered on cup # 8 - trap seems to have worked normally up to then. There was no sediment seen streaming from the trap on recovery. Cup 8 is an integrated sample covering the period for intervals 8, 9 and 10 plus the last few days before recovery.
10	GSCM4-B	Trap worked properly.
11	GSCM1-C	No trap.
12	GSCM2-C	Trap worked properly.
13	GSCM3-C	Trap worked properly.
14	GSCM4-C	Trap worked properly.
15	GSCM1-D	No trap.
16	GSCM2-D	Trap worked properly.
17	GSCM3-D	Trap worked properly.
18	GSCM4-D	Trap worked properly.
19	GSCM1-E	No trap.
20	GSCM2-E	Trap worked properly. Not enough preservative in about the first half of the collection.
21	GSCM3-E	Trap worked properly.
22	GSCM4-E	Trap worked properly.
23	GSCM1-F	No trap.
24	GSCM2-F	Trap worked properly.
25	GSCM3-F	Deployment and recovery positions were different in log. Check of bridge log confirmed position. Good collection, complete.
26	GSCM4-F	Trap worked properly.

Table 4 (continued).

Trap #	Station	Notes :
27	GSCM3-G-150	Recovered on Cup 10. Top trap towed to straightem mooring on recovery and cup 10 of top trap lost most of its contents.
28	GSCM3-G-225	Recovered on Cup 10. Does not appear to have lost any significant amount of sample.
29	GSCM3-G-300	Recovered on Cup 10 - does not appear to havve lost any significant amount of sample.
30	GSCM3-H-150	Traps closed and all collections are complete
31	GSCM3-H-225	Traps closed and all collections are complete
32	GSCM3-H-300	Traps closed and all collections are complete
33	GSCM3-I-150	All collections complete. Acoustic releases failed and mooring recovered by dragging. Top trap and top two current meters recovered on Jan 24 1230 PST. The remaining current meters and last two traps were recovered on May 26th by dragging. Acoustic release, a pinger and 3 floats were not recovered.
34	GSCM3-I-225	All collections complete. Acoustic releases failed and mooring recovered by dragging. Top trap and top two current meters recovered on Jan 24 1230 PST. The remaining current meters and last two traps were recovered on May 26th by dragging during cruise 9906. Acoustic release, a pinger and 3 floats were not recovered.
35	GSCM3-I-300	All collections complete. Acoustic releases failed and mooring recovered by dragging. Top trap and top two current meters recovered on Jan 24 1230 PST. The remaining current meters and last two traps were recovered on May 26th by dragging during cruise 9906. Acoustic release, a pinger and 3 floats were not recovered.

Table 5. Pooled standard deviation for sediment trap analysis.

Analysis	Units	Number of pairs	Pooled standard deviation	Range (total data set)	Range (analyzed pairs)
Carbonate carbon	%	36	0.013	0.001 - 0.930[1]	0.007 - 0.331
Total nitrogen	%	33	0.021	0.089 - 2.260	0.103 - 1.030
Total carbon	%	33	0.094	0.832 - 19.109	1.060 - 9.451
Organic carbon	%	33	0.114	0.708 - 19.068	0.882 - 9.333
Biogenic silica	%	31	0.573	1.579 - 28.056	1.6 - 28.1
$\delta^{13}C_{organic}$	ppt	24	0.064	(-24.165) to (-19.480)	(-24.13) to (-19.58)
$\delta^{15}N_{total}$	ppt	26	0.149	3.54 - 9.18	4.44 - 9.07
% $CaCO_3$	%	36	0.110	0.008 - 7.750	0.058 - 2.758
% OPAL	%	31	1.376	3.790 - 67.335	3.790 - 67.335

Table 6. Summary of data set.

Analysis	Units	Maximum	Minimum	Median	Average	Number
Total weight collected	g/cup	55.2	0.1	2.6	6.3	290
Total dry weight flux	$g/m^2/d$	170.0	0.3	7.0	17.4	290
Organic carbon flux	$g/m^2/d$	2338.6	15.5	175.5	338.2	290
Total nitrogen flux	$g/m^2/d$	288.5	2.1	21.6	41.8	290
Carbonate carbon flux	$g/m^2/d$	563.0	0.0	6.8	21.1	290
Biogenic silica flux	$g/m^2/d$	5534.0	21.3	296.2	750.0	290
Opal flux	$g/m^2/d$	13281.7	51.2	711.0	1800.1	290
Carbonate carbon	%	0.930	0.001	0.098	0.110	291
Calcium carbonate	%	7.750	0.008	0.817	0.917	290
Organic carbon	%	19.068	0.708	2.631	3.564	292
Total carbon	%	19.109	0.832	2.725	3.673	292
Total nitrogen	%	2.260	0.089	0.327	0.443	292
Biogenic silica	%	28.056	1.579	4.766	5.661	290
Opal	%	67.335	3.790	11.439	13.585	290
$\delta^{13}C_{organic}$ (vpdb)	ppt	-19.480	-24.165	-21.980	-21.962	280
$\delta^{15}N_{total}$ (vs air)	ppt	9.180	3.540	6.370	6.495	247
CN ratio	weight	12.835	4.108	8.051	8.125	292
CN ratio	atomic	14.968	4.791	9.389	9.475	292

Table 7. Duplicate values for CHN analysis.

Station		Cuo #	1 % N_{total}	2 % N_{total}	1 %C_{total}	2 %C_{total}	1 %$C_{organic}$	2 %$C_{organic}$
GSCM2	A	7	0.176	0.183	1.622	1.648	1.517	1.573
GSCM2	B	1	0.170	0.177	1.527	1.494	1.376	1.369
GSCM2	C	4	0.188	0.211	1.706	1.925	1.577	1.792
GSCM2	C	5	0.210	0.217	1.918	1.964	1.799	1.832
GSCM2	D	10	0.209	0.203	1.820	1.826	1.692	1.712
GSCM2	E	5	0.197	0.223	1.667	1.978	1.524	1.860
GSCM2	F	8	0.180	0.173	1.571	1.687	1.454	
GSCM2	F	4	0.182	0.175	1.649	1.664	1.531	
GSCM3	A	8	0.175	0.105	1.077	1.103	0.952	0.937
GSCM3	B	4	0.255	0.243	2.010	1.991	1.906	1.833
GSCM3	C	10	0.146	0.159	1.629	1.756	1.492	1.756
GSCM3	D	10	0.104	0.103	1.082	1.060	0.882	0.917
GSCM3	D	9	0.165	0.163	1.414	1.422	1.330	1.343
GSCM3	E	1	0.120	0.143	1.096	1.249	1.033	
GSCM3	E	2	0.147	0.157	1.152	1.319	1.070	
GSCM3	F	10	0.148	0.142	1.583	1.698	1.459	
GSCM3-150	G	2	0.227	0.229	2.222	2.196	2.145	2.101
GSCM3-150	H	1	0.284	0.278	2.547	2.528	2.370	2.362
GSCM3-150	I	10	0.216	0.258	2.066	2.052	2.000	1.969
GSCM3-225	G	4	0.418	0.403	3.227	3.113	3.170	3.061
GSCM3-225	H	1	0.238	0.237	2.068	2.130	1.933	1.979
GSCM3-225	I	9	0.183	0.258	1.939	2.031	1.862	
GSCM3-300	G	5	0.347	0.304	2.721	2.486	2.659	2.418
GSCM3-300	G	4	0.449	0.413	3.314	3.094	3.247	3.028
GSCM3-300	H	1	0.246	0.262	2.138	2.266	2.023	2.151
GSCM3-300	I	6	0.183	0.237	1.757	1.792	1.627	1.668
GSCM4	A	3	0.683	0.696	5.454	5.406	5.432	
GSCM4	B	6	0.973	1.030	9.451	9.346	9.333	9.247
GSCM4	C	3	0.919	0.939	7.698	7.915	7.497	7.726
GSCM4	D	9	1.004	0.966	6.721	6.393	6.706	
GSCM4	E	4	0.375	0.372	2.938	3.022	2.876	
GSCM4	E	3	0.575	0.575	4.260	4.328	4.252	4.321
GSCM4	F	6	0.421	0.387	3.305	3.417	3.254	
		Maximum	1.004	1.030	9.451	9.346	9.333	9.247
		Minimum	0.104	0.103	1.077	1.060	0.882	0.917

Table 8. Duplicate values for carbonate carbon analysis.

Station		Cup #	1 $\%C_{carbonate}$	1 $\%CaCO_3$	2 $\%C_{carbonate}$	2 $\%CaCO_3$
GSCM2	B	1	0.151	1.258	0.125	1.039
GSCM2	E	4	0.138	1.150	0.134	1.117
GSCM2	E	5	0.143	1.192	0.117	0.979
GSCM2	A	7	0.105	0.875	0.075	0.627
GSCM2	D	10	0.128	1.067	0.113	0.945
GSCM-2	C	4	0.129	1.075	0.133	1.109
GSCM-2	C	5	0.119	0.992	0.132	1.097
GSCM3	E	3	0.131	1.092	0.137	1.142
GSCM3	B	4	0.104	0.867	0.157	1.311
GSCM3	F	4	0.114	0.950	0.116	0.967
GSCM3	E	7	0.114	0.950	0.120	1.000
GSCM3	A	8	0.125	1.042	0.167	1.388
GSCM3	E	8	0.104	0.867	0.110	0.917
GSCM3	D	9	0.084	0.700	0.079	0.657
GSCM3	D	10	0.200	1.667	0.143	1.192
GSCM3-150	H	1	0.177	1.475	0.166	1.385
GSCM3-150	I	1	0.298	2.483	0.311	2.592
GSCM3-150	G	2	0.077	0.642	0.095	0.791
GSCM3-150	G	5	0.052	0.433	0.050	0.417
GSCM3-150	I	10	0.066	0.550	0.083	0.693
GSCM3-225	H	1	0.135	1.125	0.151	1.256
GSCM3-225	I	2	0.128	1.067	0.128	1.067
GSCM3-225	G	4	0.057	0.475	0.052	0.430
GSCM3-225	G	5	0.060	0.500	0.060	0.500
GSCM3-300	H	1	0.115	0.958	0.116	0.963
GSCM3-300	G	2	0.121	1.008	0.118	0.983
GSCM3-300	G	4	0.067	0.558	0.067	0.554
GSCM3-300	G	5	0.062	0.517	0.068	0.567
GSCM3-300	I	6	0.130	1.083	0.124	1.033
GSCM4	E	1	0.081	0.675	0.090	0.750
GSCM4	F	1	0.033	0.275	0.037	0.308
GSCM4	E	2	0.326	2.717	0.331	2.758
GSCM4	E	3	0.008	0.067	0.007	0.058
GSCM4	B	6	0.118	0.983	0.099	0.824
GSCM-4	C	3	0.201	1.675	0.190	1.580
WG-1	F	4	0.113	0.942	0.115	0.958
		maximum	0.326	2.717	0.331	2.758
		minimum	0.008	0.067	0.007	0.058

Table 9. Duplicate values for biogenic silica analysis.

Station		Cup #	1 % Biogenic Si	2 % Biogenic Si	1 % Opal	2 % Opal
GSCM2	A	7	4.318	4.775	10.363	11.461
GSCM2	C	5	4.248	4.028	10.195	9.668
GSCM2	C	4	3.638	4.594	8.730	11.025
GSCM2	D	10	3.967	4.253	9.520	10.206
GSCM2	E	5	4.958	4.515	11.900	10.836
GSCM2	F	8	2.943	3.315	7.064	7.957
GSCM2	F	4	3.204	4.174	7.689	10.018
GSCM3	A	8	1.949	2.210	4.678	5.304
GSCM3	B	4	2.797	3.773	6.712	9.056
GSCM3	C	10	1.781	2.757	4.274	6.618
GSCM3	D	10	1.579	2.138	3.790	5.131
GSCM3	D	9	4.021	3.634	9.651	8.721
GSCM3	E	2	2.036	2.339	4.886	5.614
GSCM3	E	1	2.655	2.719	6.373	6.526
GSCM3	F	10	2.166	1.597	5.197	3.832
GSCM3-150	G	2	3.511	4.252	8.425	10.205
GSCM3-150	H	1	6.212	7.895	14.910	18.948
GSCM3-150	I	10	3.139	3.080	7.534	7.392
GSCM3-225	G	4	9.214	6.981	22.114	16.753
GSCM3-225	H	1	6.683	6.126	16.040	14.702
GSCM3-225	I	9	3.306	3.425	7.935	8.221
GSCM3-300	G	5	5.333	6.522	12.799	15.652
GSCM3-300	G	4	8.714	9.483	20.913	22.758
GSCM3-300	H	1	6.746	6.524	16.190	15.658
GSCM3-300	I	6	3.690	3.086	8.855	7.407
GSCM4	A	3	28.056	26.406	67.335	63.374
GSCM4	B	6	16.822	17.542	40.372	42.101
GSCM4	C	3	6.197	6.020	14.872	14.448
GSCM4	D	9	13.690	13.966	32.855	33.518
GSCM4	E	3	4.698	4.380	11.275	10.512
GSCM4	E	4	4.195	4.843	10.067	11.623
		maximum	28.056	26.406	67.335	63.374
		minimum	1.579	1.597	3.790	3.832

Note: %Opal = (%Biogenic Si) x 2.4

Table 10. Duplicate values for carbon isotope analysis.

Station		Cup #	$\delta^{13}C$-1	$\delta^{13}C$-2
GSCM2	C	9	-22.02	-21.95
GSCM2	D	1	-22.32	-22.24
GSCM2	D	6	-21.86	-21.75
GSCM2	E	6	-22.12	-21.91
GSCM3	A	3	-20.02	-20.16
GSCM3	B	1	-22.03	-22.03
GSCM3	C	10	-24.20	-24.13
GSCM3	D	7	-20.52	-20.48
GSCM3-150	G	1	-23.33	-23.24
GSCM3-150	H	2	-22.22	-22.23
GSCM3-150	H	1	-20.39	-20.20
GSCM3-150	I	3	-22.12	-22.26
GSCM3-225	G	9	-19.78	-19.82
GSCM3-225	H	5	-22.49	-22.50
GSCM3-225	I	6	-23.55	-23.51
GSCM3-300	G	9	-21.36	-21.38
GSCM3-300	G	10	-21.03	-20.94
GSCM3-300	H	10	-21.97	-21.95
GSCM3-300	H	2	-21.53	-21.51
GSCM3-300	I	10	-22.93	-22.87
GSCM4	A	4	-20.55	-20.57
GSCM4	D	8	-20.24	-20.12
GSCM4	D	10	-19.58	-19.58
GSCM4	F	5	-21.56	-21.65
		maximum	-19.58	-19.58
		minimum	-24.20	-24.13

Table 11. Duplicate values for nitrogen isotope analysis.

Station		Cup #	δ^{15}N-1	δ^{15}N-2	δ^{15}N-3
GSCM3	A	7	4.44	4.66	
GSCM3	A	6	4.68	4.81	
GSCM2	E	2	5.73	5.51	
GSCM2	E	6	6.08	6.02	
GSCM2	C	6	5.81	6.07	5.92
GSCM2	C	4	5.96	6.24	6.23
GSCM4	E	7	6.03	6.26	
GSCM3-225	G	5	6.21	6.3	
GSCM3-225	G	6	6.33	6.3	
GSCM4	E	4	6.14	6.34	
GSCM3-225	H	1	6.22	6.36	
GSCM-150	G	8	6.55	6.37	
GSCM-150	H	2	6.27	6.47	
GSCM-150	H	3	6.27	6.63	
GSCM2	C	3	6.38	6.64	6.44
GSCM-150	H	4	6.95	6.7	
GSCM4	F	3	6.78	6.74	
GSCM3-150	H	1	6.78	6.78	
GSCM3	F	5	6.5	6.8	
GSCM3-225	H	2	6.73	6.85	
GSCM3-225	G	7	6.6	6.91	
GSCM3	B	8	7.13	7.06	
GSCM3-300	H	4	7.46	7.26	
GSCM3-300	H	8	7.48	7.53	
GSCM3-225	H	5	7.27	7.56	
GSCM3-225	H	9	8.74	9.07	
GSCM3-225	I	1	6.52	6.23	
GSCM3-300	I	9	5.23	5.55	
		maximum	8.74	9.07	6.44
		minimum	4.44	4.66	5.92

7. LIST OF APPENDICES

Appendix 1.	Percent composition, CN ratios and CN isotopes (p. 37-46).
Appendix 2.	Flux data (p. 47-56).
Appendix 3.	Plots for Station GS - 1995 to 1996 (pp. 57-62).
Appendix 4.	Plots for Stations GSCM2, GSCM3, and GSCM4 - 1996 to 1998 (pp. 63-79).
Appendix 5.	Plots for Station GSCM3 (3 depths) - 1998 to 1999 (pp. 81-92).

Appendix 1. Percent composition, CN ratio, and CN isotopes.

STATION	DATE START mm/dd/yy	DATE END mm/dd/yy	CUP #	INTERVAL days	CARB-ONATE CARBON %	ORGANIC CARBON %	TOTAL CARBON %	TOTAL NITROGEN %	CN RATIO atomic	BIO-GENIC SILICA %	$\delta^{13}C_{organic}$ vs PDB ppt	$\delta^{15}N_{total}$ vs air ppt
GS	5/13/95 0:00	5/23/95 12:00	1	10.50	0.053	3.383	3.436	0.426	9.27	13.191	-20.83	6.37
GS	5/23/95 12:00	6/3/95 0:00	2	10.50	0.088	5.261	5.349	0.659	9.31	8.076	-21.43	6.07
GS	6/3/95 0:00	6/13/95 12:00	3	10.50	0.110	3.261	3.371	0.476	7.98	8.723	-20.37	7.44
GS	6/13/95 12:00	6/24/95 0:00	4	10.50	0.025	3.437	3.462	0.510	7.85	9.295	-20.93	7.36
GS	6/24/95 0:00	9/13/95 18:00	5	81.75	0.151	3.227	3.378	0.397	9.47	8.123	-21.61	6.75
GS	10/2/95 0:00	10/22/95 0:00	1	20.00	0.188	3.128	3.316	0.415	8.78	8.511	-21.56	6.23
GS	10/22/95 0:00	11/11/95 0:00	2	20.00	0.104	2.703	2.807	0.297	10.61	4.321	-21.66	6.69
GS	11/11/95 0:00	12/1/95 0:00	3	20.00	0.182	3.072	3.254	0.384	9.33	5.173	-21.96	6.56
GS	12/1/95 0:00	12/21/95 0:00	4	20.00	0.097	2.784	2.881	0.286	11.34	4.121	-22.45	6.83
GS	12/21/95 0:00	1/10/96 0:00	5	20.00	0.186	3.555	3.741	0.406	10.22	4.880	-22.09	7.32
GS	1/10/96 0:00	1/30/96 0:00	6	20.00	0.126	3.467	3.593	0.427	9.47	5.017	-21.90	7.88
GS	1/30/96 0:00	2/19/96 0:00	7	20.00	0.120	3.096	3.216	0.423	8.54	5.521	-21.82	8.19
GS	2/19/96 0:00	3/10/96 0:00	8	20.00	0.152	2.919	3.071	0.321	10.61	4.669	-21.96	6.58
GS	3/10/96 0:00	3/30/96 0:00	9	20.00	0.012	3.215	3.227	0.458	8.19	14.845	-20.37	6.08
GS	3/30/96 0:00	4/10/96 19:10	10	11.80	0.042	3.294	3.336	0.453	8.48	13.126	-19.74	6.18

Appendix 1. Percent composition, CN ratio, and CN isotopes.

STATION		DATE START mm/dd/yy	DATE END mm/dd/yy	CUP #	INTERVAL days	CARB-ONATE CARBON %	ORGANIC CARBON %	TOTAL CARBON %	TOTAL NITROGEN %	CN RATIO atomic	BIO-GENIC SILICA %	$\delta^{13}C_{organic}$ vs PDB ppt	$\delta^{15}N_{total}$ vs air ppt
GSCM4	A	3/4/96 0:00	3/14/96 12:00	1	10.50	0.097	4.261	4.358	0.590	8.42	8.000	-21.78	7.44
GSCM4	A	3/14/96 12:00	3/25/96 0:00	2	10.50	0.019	4.970	4.989	0.667	8.69	20.430	-20.73	7.16
GSCM4	A	3/25/96 0:00	4/4/96 12:00	3	10.50	0.142	5.312	5.454	0.683	9.08	28.056	-19.48	6.74
GSCM4	A	4/4/96 12:00	4/15/96 0:00	4	10.50	0.090	8.682	8.772	1.116	9.07	11.149	-20.56	8.37
GSCM4	A	4/15/96 0:00	4/25/96 12:00	5	10.50	0.116	7.144	7.260	0.978	8.52	7.464	-20.48	8.04
GSCM4	A	4/25/96 12:00	5/6/96 0:00	6	10.50	0.062	3.875	3.937	0.565	8.00	5.057	-21.61	8.17
GSCM4	A	5/6/96 0:00	5/16/96 12:00	7	10.50	0.038	5.566	5.604	0.774	8.39	17.094	-20.01	7.68
GSCM4	A	5/16/96 12:00	5/27/96 0:00	8	10.50	0.024	7.920	7.944	0.974	9.48	18.114	-20.13	7.03
GSCM4	A	5/27/96 0:00	6/6/96 12:00	9	10.50	0.072	9.559	9.631	1.338	8.33	11.251	-20.75	7.92
GSCM4	A	6/6/96 12:00	6/17/96 0:00	10	10.50	0.050	6.161	6.211	0.803	8.95	16.092	-20.28	7.44
GSCM4	B	6/21/96 0:00	6/29/96 0:00	1	8.00	0.071	9.617	9.688	1.028	10.91	6.333	-21.43	7.29
GSCM4	B	6/29/96 0:00	7/7/96 0:00	2	8.00	0.076	9.241	9.317	0.998	10.79	6.458	-21.47	6.91
GSCM4	B	7/7/96 0:00	7/15/96 0:00	3	8.00	0.430	7.574	8.004	0.963	9.17	6.047	-21.08	7.84
GSCM4	B	7/15/96 0:00	7/23/96 0:00	4	8.00	0.112	12.715	12.827	1.252	11.84	3.925	-21.59	7.35
GSCM4	B	7/23/96 0:00	7/31/96 0:00	5	8.00	0.041	19.068	19.109	1.486	14.97	8.892	-22.22	7.12
GSCM4	B	7/31/96 0:00	8/8/96 0:00	6	8.00	0.118	9.333	9.451	0.973	11.19	16.822	-21.10	6.82
GSCM4	B	8/8/96 0:00	8/16/96 0:00	7	8.00	0.131	11.119	11.250	1.182	10.97	15.236	-21.53	7.14
GSCM4	B	8/16/96 0:00	8/24/96 0:00	8	8.00	0.076	13.439	13.515	1.446	10.84	11.101	-22.02	8.04
GSCM4	B	8/24/96 0:00	9/1/96 0:00	9	8.00	0.093	16.981	17.074	1.826	10.85	7.275	-21.93	7.30
GSCM4	B	9/1/96 0:00	9/9/96 0:00	10	8.00	0.046	12.794	12.840	1.589	9.39	8.406	-21.48	7.68
GSCM4	C	9/13/96 0:00	9/28/96 18:00	1	15.75	0.250	13.036	13.286	1.287	12.29	7.894	-22.51	7.67
GSCM4	C	9/28/96 18:00	10/14/96 12:00	2	15.75	0.174	9.693	9.867	1.078	10.49	9.112	-22.56	7.31
GSCM4	C	10/14/96 12:00	10/30/96 6:00	3	15.75	0.201	7.497	7.698	0.919	9.52	6.197	-22.48	7.99
GSCM4	C	10/30/96 6:00	11/15/96 0:00	4	15.75	0.094	8.318	8.412	0.884	10.98	5.894	-22.57	8.38
GSCM4	C	11/15/96 0:00	11/30/96 18:00	5	15.75	0.089	11.804	11.893	1.222	11.27	5.997	-22.67	8.26
GSCM4	C	11/30/96 18:00	12/16/96 12:00	6	15.75	0.109	5.847	5.956	0.690	9.88	5.161	-22.48	8.55
GSCM4	C	12/16/96 12:00	1/1/97 6:00	7	15.75	0.101	7.128	7.229	0.722	11.52	5.534	-22.86	8.12
GSCM4	C	1/1/97 6:00	1/17/97 0:00	8	15.75	0.097	4.189	4.286	0.462	10.56	5.296	-22.33	7.38
GSCM4	C	1/17/97 0:00	2/1/97 18:00	9	15.75	0.104	5.280	5.384	0.547	11.26	5.697	-22.84	7.41
GSCM4	C	2/1/97 18:00	2/17/97 12:00	10	15.75	0.068	4.310	4.378	0.523	9.62	5.181	-22.22	8.60
GSCM4	D	2/21/97 12:00	3/2/97 21:00	1	9.38	0.063	7.910	7.973	1.025	9.00	5.801	-21.98	
GSCM4	D	3/2/97 21:00	3/12/97 6:00	2	9.38	0.051	9.390	9.441	1.262	8.67	13.057		
GSCM4	D	3/12/97 6:00	3/21/97 15:00	3	9.38	0.049	7.074	7.123	1.021	8.08	8.201	-21.54	
GSCM4	D	3/21/97 15:00	3/31/97 0:00	4	9.38	0.050	5.466	5.516	0.783	8.15	8.250	-22.20	7.64

Appendix 1. Percent composition, CN ratio, and CN isotopes.

STATION		DATE START mm/dd/yy	DATE END mm/dd/yy	CUP #	INTERVAL days	CARB-ONATE CARBON %	ORGANIC CARBON %	TOTAL CARBON %	TOTAL NITROGEN %	CN RATIO atomic	BIO-GENIC SILICA %	$\delta^{13}C_{organic}$ vs PDB ppt	$\delta^{15}N_{total}$ vs air ppt
GSCM4	D	3/31/97 0:00	4/9/97 9:00	5	9.38	0.114	5.014	5.128	0.710	8.24	8.986	-22.11	7.62
GSCM4	D	4/9/97 9:00	4/18/97 18:00	6	9.38	0.002	7.497	7.499	1.083	8.08	16.211	-21.49	7.39
GSCM4	D	4/18/97 18:00	4/28/97 3:00	7	9.38	0.001	6.774	6.775	0.900	8.78	19.437	-20.13	6.88
GSCM4	D	4/28/97 3:00	5/7/97 12:00	8	9.38	0.034	7.523	7.557	1.091	8.04	14.588	-20.18	7.26
GSCM4	D	5/7/97 12:00	5/16/97 21:00	9	9.38	0.015	6.706	6.721	1.004	7.79	13.690	-19.77	7.97
GSCM4	D	5/16/97 21:00	5/26/97 6:00	10	9.38	0.086	12.922	13.008	2.260	6.67	12.066	-19.58	8.87
GSCM4	E	5/31/97 0:00	6/12/97 12:00	1	12.50	0.081	6.598	6.679	0.897	8.57	10.705	-21.10	7.06
GSCM4	E	6/12/97 12:00	6/25/97 0:00	2	12.50	0.326	8.395	8.721	1.247	7.85	5.805	-20.07	8.02
GSCM4	E	6/25/97 0:00	7/7/97 12:00	3	12.50	0.008	4.252	4.260	0.575	8.62	4.698	-20.73	7.16
GSCM4	E	7/7/97 12:00	7/20/97 0:00	4	12.50	0.062	2.876	2.938	0.375	8.94	4.195	-21.58	6.24
GSCM4	E	7/20/97 0:00	8/1/97 12:00	5	12.50	0.020	8.049	8.069	1.014	9.26	5.331	-20.78	6.87
GSCM4	E	8/1/97 12:00	8/14/97 0:00	6	12.50	0.116	4.616	4.732	0.562	9.57	4.364	-21.04	7.14
GSCM4	E	8/14/97 0:00	8/26/97 12:00	7	12.50	0.072	9.429	9.501	1.127	9.75	8.147	-21.28	6.15
GSCM4	E	8/26/97 12:00	9/8/97 0:00	8	12.50	0.057	9.031	9.088	1.050	10.03	6.240	-21.11	6.29
GSCM4	E	9/8/97 0:00	9/20/97 12:00	9	12.50	0.090	10.203	10.293	1.217	9.78	5.116	-20.71	6.63
GSCM4	E	9/20/97 12:00	10/3/97 0:00	10	12.50	0.047	10.437	10.484	1.281	9.50	5.151	-21.74	6.71
GSCM4	F	10/6/97 0:00	10/18/97 18:00	1	12.75	0.033	5.171	5.204	0.739	8.17	4.015	-21.14	7.02
GSCM4	F	10/18/97 18:00	10/31/97 12:00	2	12.75	0.066	4.921	4.987	0.666	8.62	5.161	-21.22	7.13
GSCM4	F	10/31/97 12:00	11/13/97 6:00	3	12.75	0.070	3.695	3.765	0.470	9.18	4.707	-22.07	6.76
GSCM4	F	11/13/97 6:00	11/26/97 0:00	4	12.75	0.054	3.480	3.534	0.428	9.49	5.437	-22.05	6.72
GSCM4	F	11/26/97 0:00	12/8/97 18:00	5	12.75	0.041	4.523	4.564	0.613	8.60	4.772	-21.61	8.21
GSCM4	F	12/8/97 18:00	12/21/97 12:00	6	12.75	0.051	3.254	3.305	0.421	9.01	4.991	-22.18	6.93
GSCM4	F	12/21/97 12:00	1/3/98 6:00	7	12.75	0.070	4.785	4.855	0.724	7.71	4.267	-21.45	8.50
GSCM4	F	1/3/98 6:00	1/16/98 0:00	8	12.75	0.081	4.285	4.366	0.557	8.97	5.058	-21.95	7.60
GSCM4	F	1/16/98 0:00	1/28/98 18:00	9	12.75	0.100	4.462	4.562	0.638	8.16	4.669	-21.79	8.95
GSCM4	F	1/28/98 18:00	2/10/98 12:00	10	12.75	0.027	5.408	5.435	0.744	8.48	5.009	-21.17	9.18

Appendix 1. Percent composition, CN ratio, and CN isotopes.

STATION		DATE START mm/dd/yy	DATE END mm/dd/yy	CUP #	INTERVAL days	CARB-ONATE CARBON %	ORGANIC CARBON %	TOTAL CARBON %	TOTAL NITROGEN %	CN RATIO atomic	BIO-GENIC SILICA %	$\delta^{13}C_{organic}$ vs PDB ppt	$\delta^{15}N_{total}$ vs air ppt
GSCM3	A	3/4/96 0:00	3/14/96 12:00	1	10.50	0.111	2.778	2.889	0.333	9.74	7.038	-22.26	5.98
GSCM3	A	3/14/96 12:00	3/25/96 0:00	2	10.50	0.070	1.792	1.862	0.253	8.26	8.940	-21.42	5.15
GSCM3	A	3/25/96 0:00	4/4/96 12:00	3	10.50	0.074	6.266	6.340	0.747	9.78	11.570	-20.09	6.08
GSCM3	A	4/4/96 12:00	4/15/96 0:00	4	10.50	0.058	1.899	1.957	0.237	9.36	7.424	-20.90	6.06
GSCM3	A	4/15/96 0:00	4/25/96 12:00	5	10.50	0.083	1.247	1.330	0.155	9.37	4.067	-21.81	5.91
GSCM3	A	4/25/96 12:00	5/6/96 0:00	6	10.50	0.080	1.432	1.512	0.182	9.19	2.080	-23.30	4.75
GSCM3	A	5/6/96 0:00	5/16/96 12:00	7	10.50	0.124	0.708	0.832	0.089	9.30	2.398	-23.34	4.55
GSCM3	A	5/16/96 12:00	5/27/96 0:00	8	10.50	0.125	0.952	1.077	0.175	6.34	1.949	-23.42	3.81
GSCM3	A	5/27/96 0:00	6/6/96 12:00	9	10.50	0.127	0.990	1.117	0.109	10.54	1.916	-23.54	3.93
GSCM3	A	6/6/96 12:00	6/17/96 0:00	10	10.50	0.145	1.709	1.854	0.247	8.07	3.822	-22.28	4.98
GSCM3	B	6/21/96 0:00	6/29/96 0:00	1	8.00	0.150	1.553	1.703	0.171	10.57	2.192	-22.03	5.63
GSCM3	B	6/29/96 0:00	7/7/96 0:00	2	8.00	0.111	2.599	2.710	0.338	8.96	3.480	-21.47	6.32
GSCM3	B	7/7/96 0:00	7/15/96 0:00	3	8.00	0.219	3.028	3.247	0.370	9.55	3.495	-21.49	6.29
GSCM3	B	7/15/96 0:00	7/23/96 0:00	4	8.00	0.104	1.906	2.010	0.255	8.71	2.797	-21.75	5.87
GSCM3	B	7/23/96 0:00	7/31/96 0:00	5	8.00	0.139	3.790	3.929	0.522	8.47	3.368	-21.38	6.70
GSCM3	B	7/31/96 0:00	8/8/96 0:00	6	8.00	0.085	3.070	3.155	0.405	8.85	5.396	-21.33	6.64
GSCM3	B	8/8/96 0:00	8/16/96 0:00	7	8.00	0.175	2.927	3.102	0.440	7.75	3.726	-21.38	6.85
GSCM3	B	8/16/96 0:00	8/24/96 0:00	8	26.38	0.098	5.027	5.125	0.558	10.51	5.970	-21.54	7.10
GSCM3	C	9/13/96 0:00	9/28/96 18:00	1	15.75	0.160	6.626	6.786	0.723	10.68	6.811	-21.95	7.24
GSCM3	C	9/28/96 18:00	10/14/96 12:00	2	15.75	0.117	5.968	6.085	0.704	9.89	7.631	-22.22	7.68
GSCM3	C	10/14/96 12:00	10/30/96 6:00	3	15.75	0.155	3.100	3.255	0.365	9.91	3.905	-22.43	7.17
GSCM3	C	10/30/96 6:00	11/15/96 0:00	4	15.75	0.139	2.259	2.398	0.261	10.07	3.426	-22.95	6.30
GSCM3	C	11/15/96 0:00	11/30/96 18:00	5	15.75	0.213	1.816	2.029	0.207	10.21	2.330	-23.54	6.06
GSCM3	C	11/30/96 18:00	12/16/96 12:00	6	15.75	0.195	1.765	1.960	0.191	10.75	2.669	-23.24	5.34
GSCM3	C	12/16/96 12:00	1/1/97 6:00	7	15.75	0.218	2.377	2.595	0.266	10.43	3.965	-22.89	6.77
GSCM3	C	1/1/97 6:00	1/17/97 0:00	8	15.75	0.190	1.726	1.916	0.186	10.83	2.615	-23.40	5.57
GSCM3	C	1/17/97 0:00	2/1/97 18:00	9	15.75	0.171	1.845	2.016	0.197	10.94	2.866	-23.32	4.99
GSCM3	C	2/1/97 18:00	2/17/97 12:00	10	15.75	0.137	1.492	1.629	0.146	11.96	1.781	-24.17	5.02
GSCM3	D	2/21/97 12:00	3/2/97 21:00	1	9.38	0.088	3.525	3.613	0.444	9.26	4.264	-22.50	7.65
GSCM3	D	3/2/97 21:00	3/12/97 6:00	2	9.38	0.139	1.920	2.059	0.214	10.49	2.663	-23.50	5.81
GSCM3	D	3/12/97 6:00	3/21/97 15:00	3	9.38	0.097	2.453	2.550	0.293	9.77	4.120	-22.78	5.95
GSCM3	D	3/21/97 15:00	3/31/97 0:00	4	9.38	0.057	2.426	2.483	0.287	9.85	5.845	-22.78	5.84
GSCM3	D	3/31/97 0:00	4/9/97 9:00	5	9.38	0.126	1.866	1.992	0.228	9.54	3.704	-22.94	5.51
GSCM3	D	4/9/97 9:00	4/18/97 18:00	6	9.38	0.075	2.421	2.496	0.325	8.69	6.554	-21.45	6.09

Appendix 1. Percent composition, CN ratio, and CN isotopes.

STATION		DATE START mm/dd/yy	DATE END mm/dd/yy	CUP #	INTERVAL days	CARB-ONATE CARBON %	ORGANIC CARBON %	TOTAL CARBON %	TOTAL NITROGEN %	CN RATIO atomic	BIO-GENIC SILICA %	$\delta^{13}C_{organic}$ vs PDB ppt	$\delta^{15}N_{total}$ vs air ppt
GSCM3	D	4/18/97 18:00	4/28/97 3:00	7	9.38	0.055	3.959	4.014	0.622	7.42	11.096	-20.50	7.19
GSCM3	D	4/28/97 3:00	5/7/97 12:00	8	9.38	0.096	1.319	1.415	0.161	9.55	3.096	-22.86	4.56
GSCM3	D	5/7/97 12:00	5/16/97 21:00	9	9.38	0.084	1.330	1.414	0.165	9.42	4.021	-22.32	4.98
GSCM3	D	5/16/97 21:00	5/26/97 6:00	10	9.38	0.200	0.882	1.082	0.104	9.91	1.579	-23.72	3.54
GSCM3	E	5/31/97 0:00	6/12/97 12:00	1	12.50	0.063	1.033	1.096	0.120	10.00	2.655	-22.53	5.10
GSCM3	E	6/12/97 12:00	6/25/97 0:00	2	12.50	0.082	1.070	1.152	0.147	8.49	2.036	-22.70	5.68
GSCM3	E	6/25/97 0:00	7/7/97 12:00	3	12.50	0.131	1.263	1.394	0.158	9.32	3.426	-22.23	5.69
GSCM3	E	7/7/97 12:00	7/20/97 0:00	4	12.50	0.082	1.707	1.789	0.206	9.69	3.454	-21.99	6.29
GSCM3	E	7/20/97 0:00	8/1/97 12:00	5	12.50	0.183	0.934	1.117	0.118	9.22	1.859	-22.69	5.66
GSCM3	E	8/1/97 12:00	8/14/97 0:00	6	12.50	0.128	2.825	2.953	0.346	9.52	2.760	-21.54	6.89
GSCM3	E	8/14/97 0:00	8/26/97 12:00	7	12.50	0.114	3.275	3.389	0.376	10.15	4.516	-21.45	5.72
GSCM3	E	8/26/97 12:00	9/8/97 0:00	8	12.50	0.104	2.441	2.545	0.272	10.45	3.100	-21.77	5.98
GSCM3	E	9/8/97 0:00	9/20/97 12:00	9	12.50	0.103	3.489	3.592	0.443	9.18	3.530	-21.78	7.79
GSCM3	E	9/20/97 12:00	10/3/97 0:00	10	12.50	0.106	3.060	3.166	0.358	9.97	3.937	-22.16	5.33
GSCM3	F	10/6/97 0:00	10/18/97 18:00	1	12.75	0.101	1.662	1.763	0.187	10.36	1.991	-23.16	5.81
GSCM3	F	10/18/97 18:00	10/31/97 12:00	2	12.75	0.180	1.532	1.712	0.199	8.97	2.068	-22.47	6.74
GSCM3	F	10/31/97 12:00	11/13/97 6:00	3	12.75	0.095	2.606	2.701	0.315	9.64	4.357	-22.00	6.72
GSCM3	F	11/13/97 6:00	11/26/97 0:00	4	12.75	0.114	1.405	1.519	0.173	9.47	2.255	-23.39	4.65
GSCM3	F	11/26/97 0:00	12/8/97 18:00	5	12.75	0.083	2.304	2.387	0.297	9.05	3.671	-22.07	6.65
GSCM3	F	12/8/97 18:00	12/21/97 12:00	6	12.75	0.149	1.598	1.747	0.166	11.24	2.537	-22.63	4.69
GSCM3	F	12/21/97 12:00	1/3/98 6:00	7	12.75	0.098	1.705	1.803	0.184	10.81	2.796	-22.33	5.18
GSCM3	F	1/3/98 6:00	1/16/98 0:00	8	12.75	0.135	1.508	1.643	0.161	10.91	2.409	-22.56	5.72
GSCM3	F	1/16/98 0:00	1/28/98 18:00	9	12.75	0.078	1.773	1.851	0.207	10.01	2.186	-22.59	5.85
GSCM3	F	1/28/98 18:00	2/10/98 12:00	10	12.75	0.124	1.459	1.583	0.148	11.52	2.166	-22.91	4.48

Appendix 1. Percent composition, CN ratio, and CN isotopes.

STATION		DATE START mm/dd/yy	DATE END mm/dd/yy	CUP #	INTERVAL days	CARB-ONATE CARBON %	ORGANIC CARBON %	TOTAL CARBON %	TOTAL NITROGEN %	CN RATIO atomic	BIO-GENIC SILICA %	$\delta^{13}C_{organic}$ vs PDB ppt	$\delta^{15}N_{total}$ vs air ppt
GSCM2	A	3/4/96 0:00	3/14/96 12:00	1	10.50	0.049	2.042	2.091	0.223	10.69	4.636	-22.53	5.51
GSCM2	A	3/14/96 12:00	3/25/96 0:00	2	10.50	0.020	1.864	1.884	0.229	9.49	5.988	-21.94	5.22
GSCM2	A	3/25/96 0:00	4/4/96 12:00	3	10.50	0.077	1.454	1.531	0.166	10.23	4.492	-22.23	5.90
GSCM2	A	4/4/96 12:00	4/15/96 0:00	4	10.50	0.048	1.603	1.651	0.200	9.34	4.564	-22.21	5.47
GSCM2	A	4/15/96 0:00	4/25/96 12:00	5	10.50	0.083	2.052	2.135	0.214	11.17	4.903	-22.14	5.76
GSCM2	A	4/25/96 12:00	5/6/96 0:00	6	10.50	0.087	1.821	1.908	0.219	9.69	4.266	-22.15	5.74
GSCM2	A	5/6/96 0:00	5/16/96 12:00	7	10.50	0.105	1.517	1.622	0.176	10.06	4.318	-22.31	5.71
GSCM2	A	5/16/96 12:00	5/27/96 0:00	8	10.50	0.054	1.788	1.842	0.222	9.39	4.022	-22.23	5.90
GSCM2	A	5/27/96 0:00	6/6/96 12:00	9	10.50	0.113	1.653	1.766	0.227	8.48	4.201	-21.85	6.21
GSCM2	A	6/6/96 12:00	6/17/96 0:00	10	10.50	0.049	1.554	1.603	0.209	8.67	5.261	-21.60	5.37
GSCM2	B	6/21/96 0:00	6/29/96 0:00	1	8.00	0.151	1.376	1.527	0.170	9.45	3.082	-21.97	5.59
GSCM2	B	6/29/96 0:00	7/7/96 0:00	2	8.00	0.102	1.688	1.790	0.205	9.59	5.241	-21.82	5.31
GSCM2	B	7/7/96 0:00	7/15/96 0:00	3	8.00	0.098	1.834	1.932	0.258	8.28	3.861	-21.53	5.59
GSCM2	B	7/15/96 0:00	7/23/96 0:00	4	8.00	0.084	1.372	1.456	0.200	8.01	3.487	-21.72	5.66
GSCM2	B	7/23/96 0:00	7/31/96 0:00	5	8.00	0.086	1.437	1.523	0.139	12.05	2.615	-21.72	5.61
GSCM2	B	7/31/96 0:00	8/8/96 0:00	6	8.00	0.930	0.969	1.899	0.236	4.79	4.455	-21.49	5.14
GSCM2	B	8/8/96 0:00	8/16/96 0:00	7	8.00	0.138	2.510	2.648	0.345	8.49	5.641	-21.11	5.68
GSCM2	B	8/16/96 0:00	8/24/96 0:00	8	8.00	0.115	1.763	1.878	0.242	8.48	4.458	-21.39	5.80
GSCM2	B	8/24/96 0:00	9/1/96 0:00	9	8.00	0.141	2.306	2.447	0.302	8.90	4.767	-21.40	6.40
GSCM2	B	9/1/96 0:00	9/9/96 0:00	10	8.00	0.089	4.018	4.107	0.507	9.24			
GSCM2	C	9/13/96 0:00	9/28/96 18:00	1	15.75	0.123	2.092	2.215	0.244	10.00	4.173	-21.67	6.19
GSCM2	C	9/28/96 18:00	10/14/96 12:00	2	15.75	0.117	1.634	1.751	0.194	9.84	4.765	-21.85	6.35
GSCM2	C	10/14/96 12:00	10/30/96 6:00	3	15.75	0.109	1.917	2.026	0.223	10.05	5.275	-21.67	6.49
GSCM2	C	10/30/96 6:00	11/15/96 0:00	4	15.75	0.129	1.577	1.706	0.188	9.77	3.638	-21.74	6.14
GSCM2	C	11/15/96 0:00	11/30/96 18:00	5	15.75	0.119	1.799	1.918	0.210	9.97	4.248	-21.81	6.56
GSCM2	C	11/30/96 18:00	12/16/96 12:00	6	15.75	0.098	1.873	1.971	0.214	10.23	2.987	-21.97	5.93
GSCM2	C	12/16/96 12:00	1/1/97 6:00	7	15.75	0.106	1.952	2.058	0.228	10.00	4.744	-21.75	5.53
GSCM2	C	1/1/97 6:00	1/17/97 0:00	8	15.75	0.125	1.999	2.124	0.223	10.44	3.978	-22.04	5.95
GSCM2	C	1/17/97 0:00	2/1/97 18:00	9	15.75	0.081	2.380	2.461	0.264	10.51	4.550	-21.99	5.31
GSCM2	C	2/1/97 18:00	2/17/97 12:00	10	15.75	0.090	2.239	2.329	0.246	10.62	4.353	-22.27	5.89
GSCM2	D	2/21/97 12:00	3/2/97 21:00	1	9.38	0.122	2.220	2.342	0.249	10.42	5.665	-22.28	5.75
GSCM2	D	3/2/97 21:00	3/12/97 6:00	2	9.38	0.133	1.987	2.120	0.231	10.05	3.807	-22.33	5.49
GSCM2	D	3/12/97 6:00	3/21/97 15:00	3	9.38	0.126	2.345	2.471	0.273	10.04	5.084	-22.20	5.62
GSCM2	D	3/21/97 15:00	3/31/97 0:00	4	9.38	0.096	2.421	2.517	0.281	10.06	5.103	-22.28	5.32

Appendix 1. Percent composition, CN ratio, and CN isotopes.

STATION		DATE START mm/dd/yy	DATE END mm/dd/yy	CUP #	INTERVAL days	CARB-ONATE CARBON %	ORGANIC CARBON %	TOTAL CARBON %	TOTAL NITROGEN %	CN RATIO atomic	BIO-GENIC SILICA %	$\delta^{13}C_{organic}$ vs PDB ppt	$\delta^{15}N_{total}$ vs air ppt
GSCM2	D	3/31/97 0:00	4/9/97 9:00	5	9.38	0.120	2.072	2.192	0.234	10.31	4.561	-22.23	5.47
GSCM2	D	4/9/97 9:00	4/18/97 18:00	6	9.38	0.102	2.150	2.252	0.263	9.52	5.810	-21.81	5.49
GSCM2	D	4/18/97 18:00	4/28/97 3:00	7	9.38	0.118	1.713	1.831	0.208	9.62	4.525	-21.75	5.29
GSCM2	D	4/28/97 3:00	5/7/97 12:00	8	9.38	0.098	2.496	2.594	0.319	9.13	6.733	-21.54	5.67
GSCM2	D	5/7/97 12:00	5/16/97 21:00	9	9.38	0.106	2.172	2.278	0.270	9.39	6.373	-21.77	5.27
GSCM2	D	5/16/97 21:00	5/26/97 6:00	10	9.38	0.128	1.692	1.820	0.209	9.44	3.967	-21.67	5.46
GSCM2	E	5/31/97 0:00	6/12/97 12:00	1	12.50	0.139	1.635	1.774	0.221	8.61	8.153	-21.87	5.55
GSCM2	E	6/12/97 12:00	6/25/97 0:00	2	12.50	0.149	1.704	1.853	0.246	8.08	4.468	-21.72	5.62
GSCM2	E	6/25/97 0:00	7/7/97 12:00	3	12.50	0.135	1.696	1.831	0.219	9.05	5.606	-21.93	5.95
GSCM2	E	7/7/97 12:00	7/20/97 0:00	4	12.50	0.138	1.757	1.895	0.236	8.67	4.289	-21.78	5.77
GSCM2	E	7/20/97 0:00	8/1/97 12:00	5	12.50	0.143	1.524	1.667	0.197	9.04	4.958	-21.93	5.84
GSCM2	E	8/1/97 12:00	8/14/97 0:00	6	12.50	0.103	1.731	1.834	0.225	8.96	4.248	-22.02	6.05
GSCM2	E	8/14/97 0:00	8/26/97 12:00	7	12.50	0.140	1.768	1.908	0.257	8.69	4.510	-21.99	6.40
GSCM2	E	8/26/97 12:00	9/8/97 0:00	8	12.50	0.120	2.043	2.163	0.239	9.97	4.117	-21.66	6.45
GSCM2	E	9/8/97 0:00	9/20/97 12:00	9	12.50	0.166	1.688	1.854	0.203	9.70	4.643	-21.82	6.37
GSCM2	E	9/20/97 12:00	10/3/97 0:00	10	12.50	0.066	2.332	2.398	0.296	9.20	4.363	-21.88	6.78
GSCM2	F	10/6/97 0:00	10/18/97 18:00	1	12.75	0.083	2.054	2.137	0.246	9.73	3.884	-21.95	6.55
GSCM2	F	10/18/97 18:00	10/31/97 12:00	2	12.75	0.116	1.851	1.967	0.229	9.44	3.783	-22.06	6.29
GSCM2	F	10/31/97 12:00	11/13/97 6:00	3	12.75	0.104	1.829	1.933	0.221	9.63	3.804	-21.96	6.27
GSCM2	F	11/13/97 6:00	11/26/97 0:00	4	12.75	0.118	1.531	1.649	0.182	9.81	3.204	-22.36	6.47
GSCM2	F	11/26/97 0:00	12/8/97 18:00	5	12.75	0.098	1.825	1.923	0.224	9.49	3.910	-22.24	6.14
GSCM2	F	12/8/97 18:00	12/21/97 12:00	6	12.75	0.123	1.370	1.493	0.172	9.27	3.624	-22.16	6.35
GSCM2	F	12/21/97 12:00	1/3/98 6:00	7	12.75	0.092	1.603	1.695	0.191	9.78	3.187	-22.19	6.07
GSCM2	F	1/3/98 6:00	1/16/98 0:00	8	12.75	0.117	1.454	1.571	0.180	9.45	2.943	-22.31	6.32
GSCM2	F	1/16/98 0:00	1/28/98 18:00	9	12.75	0.113	1.712	1.825	0.213	9.36	3.588	-21.98	6.73
GSCM2	F	1/28/98 18:00	2/10/98 12:00	10	12.75	0.124	1.795	1.919	0.230	9.09	3.220	-22.08	6.70

Appendix 1. Percent composition, CN ratio, and CN isotopes.

STATION	DATE START mm/dd/yy	DATE END mm/dd/yy	CUP #	INTERVAL days	CARB-ONATE CARBON %	ORGANIC CARBON %	TOTAL CARBON %	TOTAL NITROGEN %	CN RATIO atomic	BIO-GENIC SILICA %	$\delta^{13}C_{organic}$ vs PDB ppt	$\delta^{15}N_{total}$ vs air ppt
GSCM3-G-150	2/14/98 0:00	2/24/98 18:00	1	10.75	0.082	2.251	2.333	0.213	12.32	2.595	-23.33	6.08
GSCM3-G-150	2/24/98 18:00	3/7/98 12:00	2	10.75	0.077	2.145	2.222	0.227	11.01	3.511	-22.85	5.68
GSCM3-G-150	3/7/98 12:00	3/18/98 6:00	3	10.75	0.084	2.757	2.841	0.345	9.33	6.680	-21.69	5.53
GSCM3-G-150	3/18/98 6:00	3/29/98 0:00	4	10.75	0.061	3.398	3.459	0.468	8.47	10.194	-20.38	5.78
GSCM3-G-150	3/29/98 0:00	4/8/98 18:00	5	10.75	0.052	2.472	2.524	0.282	10.23	6.703	-21.16	6.08
GSCM3-G-150	4/8/98 18:00	4/19/98 12:00	6	10.75	0.090	3.402	3.492	0.393	10.09	7.369	-20.85	6.09
GSCM3-G-150	4/19/98 12:00	4/30/98 6:00	7	10.75	0.087	3.104	3.191	0.386	9.38	7.706	-20.49	7.18
GSCM3-G-150	4/30/98 6:00	5/11/98 0:00	8	10.75	0.060	1.896	1.956	0.230	9.60	4.956	-21.57	6.55
GSCM3-G-150	5/11/98 0:00	5/21/98 18:00	9	10.75	0.066	2.368	2.434	0.291	9.50	5.234	-21.1	6.91
GSCM3-G-150	5/21/98 18:00	5/31/1998 13:25	10	9.809		2.809	2.809	0.326	10.05			
GSCM3-H-150	6/2/98 0:00	6/14/98 6:00	1	12.25	0.177	2.370	2.547	0.284	9.72	6.212	-20.39	6.78
GSCM3-H-150	6/14/98 6:00	6/26/98 12:00	2	12.25	0.318	1.835	2.153	0.234	9.14	3.524	-22.22	6.27
GSCM3-H-150	6/26/98 12:00	7/8/98 18:00	3	12.25	0.243	2.303	2.546	0.311	8.65	3.160	-23.09	6.27
GSCM3-H-150	7/8/98 18:00	7/21/98 0:00	4	12.25	0.130	2.577	2.707	0.336	8.95	4.216	-23.17	6.95
GSCM3-H-150	7/21/98 0:00	8/2/98 6:00	5	12.25	0.144	3.148	3.292	0.430	8.53	3.842	-22.96	6.82
GSCM3-H-150	8/2/98 6:00	8/14/98 12:00	6	12.25	0.135	3.065	3.200	0.408	8.76	4.296	-22.39	6.94
GSCM3-H-150	8/14/98 12:00	8/26/98 18:00	7	12.25	0.330	4.892	5.222	0.691	8.25	6.822	-22.06	7.37
GSCM3-H-150	8/26/98 18:00	9/8/98 0:00	8	12.25	0.273	6.400	6.673	0.921	8.10	8.910	-22.99	7.61
GSCM3-H-150	9/8/98 0:00	9/20/98 6:00	9	12.25	0.324	5.179	5.503	0.741	8.15	8.512	-23.15	8.09
GSCM3-H-150	9/20/98 6:00	10/2/98 12:00	10	12.25	0.271	7.507	7.778	1.110	7.88	9.072	-22.92	
GSCM3-I-150	10/4/98 0:00	10/14/98 18:00	1	10.750	0.298	4.079	4.4	0.5	8.82	4.672	-22.900	6.00
GSCM3-I-150	10/14/98 18:00	10/25/98 12:00	2	10.750	0.253	3.773	4.0	0.5	9.06	5.182	-22.580	6.89
GSCM3-I-150	10/25/98 12:00	11/5/98 6:00	3	10.750	0.150	4.267	4.4	0.6	8.58	7.523	-22.120	7.75
GSCM3-I-150	11/5/98 6:00	11/16/98 0:00	4	10.750	0.205	2.643	2.8	0.3	9.01	4.068	-22.540	6.79
GSCM3-I-150	11/16/98 0:00	11/26/98 18:00	5	10.750	0.122	2.100	2.2	0.2	10.51	3.223	-23.110	5.62
GSCM3-I-150	11/26/98 18:00	12/7/98 12:00	6	10.750	0.118	1.571	1.7	0.2	11.72	2.408	-23.820	5.55
GSCM3-I-150	12/7/98 12:00	12/18/98 6:00	7	10.750	0.099	1.757	1.9	0.2	11.35	2.435	-23.500	6.39
GSCM3-I-150	12/18/98 6:00	12/29/98 0:00	8	10.750	0.118	2.506	2.6	0.3	9.71	3.534	-23.020	6.83
GSCM3-I-150	12/29/98 0:00	1/8/99 18:00	9	10.750	0.064	1.938	2.0	0.2	10.77	2.963	-23.130	6.29
GSCM3-I-150	1/8/99 18:00	1/19/99 12:00	10	10.750	0.066	2.000	2.1	0.2	10.82	3.139	-23.330	5.95

Appendix 1. Percent composition, CN ratio, and CN isotopes.

STATION	DATE START mm/dd/yy	DATE END mm/dd/yy	CUP #	INTERVAL days	CARB-ONATE CARBON %	ORGANIC CARBON %	TOTAL CARBON %	TOTAL NITROGEN %	CN RATIO atomic	BIO-GENIC SILICA %	$\delta^{13}C_{organic}$ vs PDB ppt	$\delta^{15}N_{total}$ vs air ppt
GSCM3-G-225	2/14/98 0:00	2/24/98 18:00	1	10.75	0.070	2.510	2.580	0.289	10.14	3.425	-22.36	7.27
GSCM3-G-225	2/24/98 18:00	3/7/98 12:00	2	10.75	0.075	2.304	2.379	0.249	10.78	4.249	-22.71	6.6
GSCM3-G-225	3/7/98 12:00	3/18/98 6:00	3	10.75	0.053	3.118	3.171	0.410	8.87	6.434	-21.42	5.73
GSCM3-G-225	3/18/98 6:00	3/29/98 0:00	4	10.75	0.057	3.170	3.227	0.418	8.84	9.214	-20.82	6.16
GSCM3-G-225	3/29/98 0:00	4/8/98 18:00	5	10.75	0.060	2.723	2.783	0.315	10.09	5.334	-21.31	6.21
GSCM3-G-225	4/8/98 18:00	4/19/98 12:00	6	10.75	0.064	3.235	3.299	0.407	9.27	6.939	-20.92	6.33
GSCM3-G-225	4/19/98 12:00	4/30/98 6:00	7	10.75	0.060	3.342	3.402	0.427	9.13	6.809	-20.7	6.6
GSCM3-G-225	4/30/98 6:00	5/11/98 0:00	8	10.75	0.045	2.363	2.408	0.305	9.03	4.336	-21.61	6.52
GSCM3-G-225	5/11/98 0:00	5/21/98 18:00	9	10.75	0.086	3.871	3.957	0.684	6.60	5.914	-19.78	8.51
GSCM3-G-225	5/21/98 18:00	5/31/1998 13:25	10	9.809	0.103	2.850	2.953	0.451	7.38	6.168	-20.07	8.08
GSCM3-H-225	6/2/98 0:00	6/14/98 6:00	1	12.25	0.135	1.933	2.068	0.238	9.48	6.683	-20.96	6.22
GSCM3-H-225	6/14/98 6:00	6/26/98 12:00	2	12.25	0.239	1.909	2.148	0.252	8.85	4.407	-21.86	6.73
GSCM3-H-225	6/26/98 12:00	7/8/98 18:00	3	12.25	0.127	2.084	2.211	0.264	9.21	3.689	-22.79	6.56
GSCM3-H-225	7/8/98 18:00	7/21/98 0:00	4	12.25	0.189	2.398	2.587	0.316	8.85	4.455	-22.99	6.21
GSCM3-H-225	7/21/98 0:00	8/2/98 6:00	5	12.25	0.100	3.129	3.229	0.435	8.38	5.341	-22.49	7.27
GSCM3-H-225	8/2/98 6:00	8/14/98 12:00	6	12.25	0.112	2.823	2.935	0.351	9.38	4.860	-22.37	6.22
GSCM3-H-225	8/14/98 12:00	8/26/98 18:00	7	12.25	0.148	3.384	3.532	0.439	8.99	6.180	-21.95	6.86
GSCM3-H-225	8/26/98 18:00	9/8/98 0:00	8	12.25	0.170	3.597	3.767	0.459	9.14	8.276	-22.46	7.5
GSCM3-H-225	9/8/98 0:00	9/20/98 6:00	9	12.25	0.160	4.026	4.186	0.622	7.55	6.848	-21.88	8.74
GSCM3-H-225	9/20/98 6:00	10/2/98 12:00	10	12.25	0.234	4.659	4.893	0.645	8.43	8.105	-22.48	7.61
GSCM3-I-225	10/4/98 0:00	10/14/98 18:00	1	10.750	0.060	2.670	2.7	0.3	9.48	4.680	-22.800	6.52
GSCM3-I-225	10/14/98 18:00	10/25/98 12:00	2	10.750	0.128	3.300	3.4	0.4	9.24	5.220	-22.430	7.35
GSCM3-I-225	10/25/98 12:00	11/5/98 6:00	3	10.750	0.069	3.546	3.6	0.4	9.32	6.300	-22.180	7.69
GSCM3-I-225	11/5/98 6:00	11/16/98 0:00	4	10.750	0.062	2.954	3.0	0.4	9.72	4.304	-22.670	8.14
GSCM3-I-225	11/16/98 0:00	11/26/98 18:00	5	10.750	0.090	2.166	2.26	0.24	10.32	3.825	-22.740	6.46
GSCM3-I-225	11/26/98 18:00	12/7/98 12:00	6	10.750	0.089	1.672	1.76	0.18	10.84	2.671	-23.550	5.96
GSCM3-I-225	12/7/98 12:00	12/18/98 6:00	7	10.750	0.073	1.851	1.92	0.18	11.86	2.906	-23.360	5.87
GSCM3-I-225	12/18/98 6:00	12/29/98 0:00	8	10.750	0.071	2.201	2.27	0.24	10.78	4.054	-22.850	5.73
GSCM3-I-225	12/29/98 0:00	1/8/99 18:00	9	10.750	0.077	1.862	1.94	0.18	11.87	3.306	-23.090	6.02
GSCM3-I-225	1/8/99 18:00	1/19/99 12:00	10	10.750	0.071	1.993	2.06	0.22	10.62	3.397	-23.240	6.27

Appendix 1. Percent composition, CN ratio, and CN isotopes.

STATION	DATE START mm/dd/yy	DATE END mm/dd/yy	CUP #	INTERVAL days	CARB-ONATE CARBON %	ORGANIC CARBON %	TOTAL CARBON %	TOTAL NITROGEN %	CN RATIO atomic	BIO-GENIC SILICA %	$\delta^{13}C_{organic}$ vs PDB ppt	$\delta^{15}N_{total}$ vs air ppt
GSCM3-G-300	2/14/98 0:00	2/24/98 18:00	1	10.75	0.090	2.102	2.192	0.239	10.27	3.903	-22.88	6.37
GSCM3-G-300	2/24/98 18:00	3/7/98 12:00	2	10.75	0.121	2.184	2.305	0.254	10.03	3.786	-22.71	5.95
GSCM3-G-300	3/7/98 12:00	3/18/98 6:00	3	10.75	0.076	2.837	2.913	0.371	8.93	5.900	-21.79	5.81
GSCM3-G-300	3/18/98 6:00	3/29/98 0:00	4	10.75	0.067	3.247	3.314	0.449	8.43	8.714	-20.68	5.87
GSCM3-G-300	3/29/98 0:00	4/8/98 18:00	5	10.75	0.062	2.659	2.721	0.347	8.93	5.333	-21.55	5.51
GSCM3-G-300	4/8/98 18:00	4/19/98 12:00	6	10.75	0.100	2.907	3.007	0.384	8.84	6.880	-21.39	6.17
GSCM3-G-300	4/19/98 12:00	4/30/1998 6:00	7	10.75	0.063	2.810	2.873	0.374	8.76	6.265	-21.24	5.91
GSCM3-G-300	4/30/98 6:00	5/11/1998 0:00	8	10.75	0.076	2.181	2.257	0.288	8.84	4.193	-21.91	5.39
GSCM3-G-300	5/11/98 0:00	5/21/1998 18:00	9	10.75	0.079	2.485	2.564	0.341	8.50	5.066	-21.36	6.03
GSCM3-G-300	5/21/98 18:00	5/31/1998 13:25	10	9.809	0.067	2.690	2.757	0.410	7.65	5.761	-21.03	6.36
GSCM3-H-300	6/2/98 0:00	6/14/98 6:00	1	12.25	0.115	2.023	2.138	0.246	9.60	6.746	-20.93	6.61
GSCM3-H-300	6/14/98 6:00	6/26/98 12:00	2	12.25	0.162	2.330	2.492	0.302	8.99	4.906	-21.53	7.35
GSCM3-H-300	6/26/98 12:00	7/8/98 18:00	3	12.25	0.100	2.479	2.579	0.328	8.80	3.619	-21.89	7.3
GSCM3-H-300	7/8/98 18:00	7/21/98 0:00	4	12.25	0.091	2.449	2.540	0.312	9.14	4.250	-22.27	7.46
GSCM3-H-300	7/21/98 0:00	8/2/98 6:00	5	12.25	0.070	2.770	2.840	0.357	9.04	5.291	-22.48	7.08
GSCM3-H-300	8/2/98 6:00	8/14/98 12:00	6	12.25	0.127	2.628	2.755	0.332	9.22	4.663	-22.19	6.71
GSCM3-H-300	8/14/98 12:00	8/26/98 18:00	7	12.25	0.123	2.826	2.949	0.360	9.15	5.733	-22.00	7.34
GSCM3-H-300	8/26/98 18:00	9/8/98 0:00	8	12.25	0.134	2.907	3.041	0.378	8.97	6.847	-21.89	7.48
GSCM3-H-300	9/8/98 0:00	9/20/98 6:00	9	12.25	0.121	2.641	2.762	0.336	9.18	5.916	-22.25	7.09
GSCM3-H-300	9/20/98 6:00	10/2/98 12:00	10	12.25	0.113	3.115	3.228	0.408	8.91	6.776	-21.97	7.17
GSCM3-I-300	10/4/98 0:00	10/14/98 18:00	1	10.750	0.067	2.433	2.50	0.28	10.10	6.282	-22.310	6.39
GSCM3-I-300	10/14/98 18:00	10/25/98 12:00	2	10.750	0.072	2.828	2.90	0.34	9.61	6.175	-22.150	7.64
GSCM3-I-300	10/25/98 12:00	11/5/98 6:00	3	10.750	0.061	2.843	2.90	0.33	10.12	7.644	-22.180	6.92
GSCM3-I-300	11/5/98 6:00	11/16/98 0:00	4	10.750	0.067	2.319	2.4	0.3	10.33	4.797	-22.580	6.96
GSCM3-I-300	11/16/98 0:00	11/26/98 18:00	5	10.750	0.074	2.236	2.3	0.3	10.23	4.211	-22.900	7.06
GSCM3-I-300	11/26/98 18:00	12/7/98 12:00	6	10.750	0.130	1.627	1.8	0.2	10.38	3.690	-23.250	5.82
GSCM3-I-300	12/7/98 12:00	12/18/98 6:00	7	10.750	0.088	1.859	1.9	0.2	10.21	3.312	-23.000	6.52
GSCM3-I-300	12/18/98 6:00	12/29/98 0:00	8	10.750	0.057	2.242	2.3	0.2	10.61	3.856	-22.870	5.52
GSCM3-I-300	12/29/98 0:00	1/8/99 18:00	9	10.750	0.064	2.150	2.2	0.2	10.04	3.743	-22.900	5.23
GSCM3-I-300	1/8/99 18:00	1/19/99 12:00	10	10.750	0.075	2.178	2.3	0.2	10.35	3.551	-22.930	6.15

Appendix 2. Flux Data.

STATION	DATE START mm/dd/yy	DATE END mm/dd/yy	CUP #	INTERVAL days	TOTAL DRY WEIGHT g/cup	TOTAL DRY WEIGHT FLUX $g/m^2/d$	ORGANIC CARBON FLUX $g/m^2/d$	TOTAL NITROGEN FLUX $g/m^2/d$	CARBONATE CARBON FLUX $g/m^2/d$	BIOGENIC SILICA FLUX $g/m^2/d$
GS	5/13/95 0:00	5/23/95 12:00	1	10.50	0.860	2.608	88.21	11.10	1.38	343.97
GS	5/23/95 12:00	6/3/95 0:00	2	10.50	2.182	6.618	348.21	43.63	5.82	534.47
GS	6/3/95 0:00	6/13/95 12:00	3	10.50	2.183	6.623	215.93	31.54	7.28	577.69
GS	6/13/95 12:00	6/24/95 0:00	4	10.50	0.863	2.618	89.98	13.36	0.65	243.39
GS	6/24/95 0:00	9/13/95 18:00	5	81.75	8.876	3.458	111.57	13.74	5.22	280.88
GS	10/2/95 0:00	10/22/95 0:00	1	20.00	2.754	4.385	137.16	18.21	8.24	373.25
GS	10/22/95 0:00	11/11/95 0:00	2	20.00	2.882	4.589	124.04	13.63	4.77	198.29
GS	11/11/95 0:00	12/1/95 0:00	3	20.00	1.676	2.669	81.99	10.24	4.86	138.08
GS	12/1/95 0:00	12/21/95 0:00	4	20.00	1.776	2.828	78.73	8.10	2.74	116.54
GS	12/21/95 0:00	1/10/96 0:00	5	20.00	0.906	1.442	51.29	5.85	2.68	70.40
GS	1/10/96 0:00	1/30/96 0:00	6	20.00	0.895	1.426	49.43	6.09	1.80	71.53
GS	1/30/96 0:00	2/19/96 0:00	7	20.00	1.242	1.977	61.20	8.35	2.37	109.14
GS	2/19/96 0:00	3/10/96 0:00	8	20.00	1.274	2.029	59.25	6.51	3.08	94.75
GS	3/10/96 0:00	3/30/96 0:00	9	20.00	1.992	3.172	102.00	14.53	0.38	470.93
GS	3/30/96 0:00	4/10/96 19:10	10	11.80	2.604	7.029	231.55	31.86	2.95	922.70

Appendix 2. Flux Data.

STATION		DATE START mm/dd/yy	DATE END mm/dd/yy	CUP #	INTERVAL days	TOTAL DRY WEIGHT g/cup	TOTAL DRY WEIGHT FLUX $g/m^2/d$	ORGANIC CARBON FLUX $g/m^2/d$	TOTAL NITROGEN FLUX $g/m^2/d$	CARBONATE CARBON FLUX $g/m^2/d$	BIOGENIC SILICA FLUX $g/m^2/d$
GSCM4	D	3/31/97 0:00	4/9/97 9:00	5	9.38	0.391	1.330	66.67	9.44	1.52	119.50
GSCM4	D	4/9/97 9:00	4/18/97 18:00	6	9.38	0.240	0.814	61.05	8.82	0.02	132.00
GSCM4	D	4/18/97 18:00	4/28/97 3:00	7	9.38	0.458	1.556	105.40	14.00	0.02	302.44
GSCM4	D	4/28/97 3:00	5/7/97 12:00	8	9.38	0.332	1.127	84.77	12.30	0.38	164.39
GSCM4	D	5/7/97 12:00	5/16/97 21:00	9	9.38	0.492	1.670	111.98	16.77	0.25	228.59
GSCM4	D	5/16/97 21:00	5/26/97 6:00	10	9.38	0.277	0.942	121.67	21.28	0.81	113.61
GSCM4	E	5/31/97 0:00	6/12/97 12:00	1	12.50	0.865	2.204	145.45	19.78	1.79	235.96
GSCM4	E	6/12/97 12:00	6/25/97 0:00	2	12.50	0.564	1.438	120.71	17.93	4.69	83.47
GSCM4	E	6/25/97 0:00	7/7/97 12:00	3	12.50	1.035	2.636	112.07	15.15	0.21	123.83
GSCM4	E	7/7/97 12:00	7/20/97 0:00	4	12.50	1.731	4.410	126.85	16.54	2.73	185.00
GSCM4	E	7/20/97 0:00	8/1/97 12:00	5	12.50	0.910	2.319	186.70	23.52	0.46	123.66
GSCM4	E	8/1/97 12:00	8/14/97 0:00	6	12.50	0.576	1.468	67.77	8.26	1.70	64.06
GSCM4	E	8/14/97 0:00	8/26/97 12:00	7	12.50	0.584	1.488	140.34	16.78	1.07	121.25
GSCM4	E	8/26/97 12:00	9/8/97 0:00	8	12.50	0.553	1.408	127.15	14.78	0.80	87.85
GSCM4	E	9/8/97 0:00	9/20/97 12:00	9	12.50	0.474	1.208	123.27	14.70	1.09	61.81
GSCM4	E	9/20/97 12:00	10/3/97 0:00	10	12.50	0.443	1.130	117.91	14.47	0.53	58.18
GSCM4	F	10/6/97 0:00	10/18/97 18:00	1	12.75	0.404	1.009	52.16	7.45	0.33	40.50
GSCM4	F	10/18/97 18:00	10/31/97 12:00	2	12.75	0.353	0.883	43.43	5.88	0.58	45.55
GSCM4	F	10/31/97 12:00	11/13/97 6:00	3	12.75	0.475	1.186	43.81	5.57	0.83	55.81
GSCM4	F	11/13/97 6:00	11/26/97 0:00	4	12.75	0.467	1.167	40.63	4.99	0.63	63.46
GSCM4	F	11/26/97 0:00	12/8/97 18:00	5	12.75	0.544	1.359	61.49	8.33	0.56	64.87
GSCM4	F	12/8/97 18:00	12/21/97 12:00	6	12.75	0.607	1.516	49.32	6.38	0.77	75.65
GSCM4	F	12/21/97 12:00	1/3/98 6:00	7	12.75	0.441	1.101	52.68	7.97	0.77	46.98
GSCM4	F	1/3/98 6:00	1/16/98 0:00	8	12.75	0.314	0.783	33.57	4.37	0.63	39.63
GSCM4	F	1/16/98 0:00	1/28/98 18:00	9	12.75	0.302	0.755	33.68	4.81	0.75	35.25
GSCM4	F	1/28/98 18:00	2/10/98 12:00	10	12.75	0.324	0.808	43.70	6.01	0.22	40.48

Appendix 2. Flux Data.

STATION		DATE START mm/dd/yy	DATE END mm/dd/yy	CUP #	INTERVAL days	TOTAL DRY WEIGHT g/cup	TOTAL DRY WEIGHT FLUX g/m²/d	ORGANIC CARBON FLUX g/m²/d	TOTAL NITROGEN FLUX g/m²/d	CARBONATE CARBON FLUX g/m²/d	BIOGENIC SILICA FLUX g/m²/d
GSCM4	A	3/4/96 0:00	3/14/96 12:00	1	10.50	0.321	0.975	41.53	5.75	0.95	77.96
GSCM4	A	3/14/96 12:00	3/25/96 0:00	2	10.50	0.103	0.313	15.53	2.08	0.06	63.85
GSCM4	A	3/25/96 0:00	4/4/96 12:00	3	10.50	1.039	3.152	167.42	21.51	4.48	884.32
GSCM4	A	4/4/96 12:00	4/15/96 0:00	4	10.50	0.298	0.902	78.34	10.07	0.81	100.61
GSCM4	A	4/15/96 0:00	4/25/96 12:00	5	10.50	0.339	1.029	73.50	10.06	1.19	76.79
GSCM4	A	4/25/96 12:00	5/6/96 0:00	6	10.50	0.702	2.130	82.54	12.04	1.32	107.71
GSCM4	A	5/6/96 0:00	5/16/96 12:00	7	10.50	0.322	0.978	54.42	7.57	0.37	167.12
GSCM4	A	5/16/96 12:00	5/27/96 0:00	8	10.50	0.449	1.363	107.96	13.28	0.33	246.91
GSCM4	A	5/27/96 0:00	6/6/96 12:00	9	10.50	0.273	0.829	79.26	11.09	0.60	93.28
GSCM4	A	6/6/96 12:00	6/17/96 0:00	10	10.50	0.495	1.502	92.54	12.06	0.75	241.68
GSCM4	B	6/21/96 0:00	6/29/96 0:00	1	8.00	0.482	1.921	184.70	19.75	1.36	121.63
GSCM4	B	6/29/96 0:00	7/7/96 0:00	2	8.00	0.491	1.956	180.79	19.53	1.49	126.34
GSCM4	B	7/7/96 0:00	7/15/96 0:00	3	8.00	0.350	1.395	105.66	13.44	6.00	84.35
GSCM4	B	7/15/96 0:00	7/23/96 0:00	4	8.00	0.345	1.372	174.48	17.18	1.54	53.86
GSCM4	B	7/23/96 0:00	7/31/96 0:00	5	8.00	0.278	1.105	210.78	16.42	0.45	98.29
GSCM4	B	7/31/96 0:00	8/8/96 0:00	6	8.00	0.500	1.989	185.62	19.35	2.35	334.57
GSCM4	B	8/8/96 0:00	8/16/96 0:00	7	8.00	0.278	1.106	122.99	13.07	1.45	168.53
GSCM4	B	8/16/96 0:00	8/24/96 0:00	8	8.00	0.270	1.075	144.51	15.55	0.82	119.37
GSCM4	B	8/24/96 0:00	9/1/96 0:00	9	8.00	0.306	1.217	206.60	22.21	1.13	88.51
GSCM4	B	9/1/96 0:00	9/9/96 0:00	10	8.00	0.248	0.986	126.21	15.68	0.45	82.92
GSCM4	C	9/13/96 0:00	9/28/96 18:00	1	15.75	0.467	0.945	123.20	11.69	2.36	74.60
GSCM4	C	9/28/96 18:00	10/14/96 12:00	2	15.75	0.404	0.817	79.18	8.80	1.42	74.44
GSCM4	C	10/14/96 12:00	10/30/96 6:00	3	15.75	0.503	1.016	76.19	9.33	2.04	62.98
GSCM4	C	10/30/96 6:00	11/15/96 0:00	4	15.75	0.291	0.588	48.91	5.20	0.55	34.65
GSCM4	C	11/15/96 0:00	11/30/96 18:00	5	15.75	0.184	0.371	43.82	4.54	0.33	22.26
GSCM4	C	11/30/96 18:00	12/16/96 12:00	6	15.75	0.238	0.482	28.16	3.32	0.52	24.86
GSCM4	C	12/16/96 12:00	1/1/97 6:00	7	15.75	0.191	0.386	27.50	2.78	0.39	21.35
GSCM4	C	1/1/97 6:00	1/17/97 0:00	8	15.75	0.380	0.768	32.16	3.55	0.74	40.65
GSCM4	C	1/17/97 0:00	2/1/97 18:00	9	15.75	0.254	0.513	27.08	2.80	0.53	29.22
GSCM4	C	2/1/97 18:00	2/17/97 12:00	10	15.75	0.379	0.766	32.99	4.00	0.52	39.66
GSCM4	D	2/21/97 12:00	3/2/97 21:00	1	9.38	0.187	0.636	50.27	6.52	0.40	36.87
GSCM4	D	3/2/97 21:00	3/12/97 6:00	2	9.38	0.140	0.475	44.57	5.99	0.24	61.98
GSCM4	D	3/12/97 6:00	3/21/97 15:00	3	9.38	0.195	0.661	46.77	6.75	0.32	54.22
GSCM4	D	3/21/97 15:00	3/31/97 0:00	4	9.38	0.266	0.903	49.34	7.06	0.45	74.47

Appendix 2. Flux Data.

STATION		DATE START mm/dd/yy	DATE END mm/dd/yy	CUP #	INTERVAL days	TOTAL DRY WEIGHT g/cup	TOTAL DRY WEIGHT FLUX $g/m^2/d$	ORGANIC CARBON FLUX $g/m^2/d$	TOTAL NITROGEN FLUX $g/m^2/d$	CARBONATE CARBON FLUX $g/m^2/d$	BIOGENIC SILICA FLUX $g/m^2/d$
GSCM3	A	3/4/96 0:00	3/14/96 12:00	1	10.50	0.989	2.999	83.32	9.98	3.33	211.07
GSCM3	A	3/14/96 12:00	3/25/96 0:00	2	10.50	2.992	9.076	162.61	22.95	6.35	811.38
GSCM3	A	3/25/96 0:00	4/4/96 12:00	3	10.50	3.458	10.488	657.16	78.35	7.76	1213.41
GSCM3	A	4/4/96 12:00	4/15/96 0:00	4	10.50	1.897	5.755	109.28	13.62	3.34	427.21
GSCM3	A	4/15/96 0:00	4/25/96 12:00	5	10.50	2.936	8.906	111.07	13.83	7.39	362.20
GSCM3	A	4/25/96 12:00	5/6/96 0:00	6	10.50	7.051	21.385	306.27	38.88	17.11	444.88
GSCM3	A	5/6/96 0:00	5/16/96 12:00	7	10.50	5.947	18.037	127.63	16.01	22.37	432.59
GSCM3	A	5/16/96 12:00	5/27/96 0:00	8	10.50	7.343	22.273	212.02	39.03	27.84	434.12
GSCM3	A	5/27/96 0:00	6/6/96 12:00	9	10.50	6.709	20.348	201.37	22.27	25.84	389.90
GSCM3	A	6/6/96 12:00	6/17/96 0:00	10	10.50	4.170	12.649	216.19	31.22	18.34	483.49
GSCM3	B	6/21/96 0:00	6/29/96 0:00	1	8.00	2.489	9.909	153.88	16.97	14.86	217.17
GSCM3	B	6/29/96 0:00	7/7/96 0:00	2	8.00	1.594	6.344	164.85	21.46	7.04	220.75
GSCM3	B	7/7/96 0:00	7/15/96 0:00	3	8.00	0.985	3.921	118.73	14.50	8.59	137.04
GSCM3	B	7/15/96 0:00	7/23/96 0:00	4	8.00	2.965	11.804	224.99	30.12	12.28	330.11
GSCM3	B	7/23/96 0:00	7/31/96 0:00	5	8.00	0.811	3.228	122.34	16.84	4.49	108.73
GSCM3	B	7/31/96 0:00	8/8/96 0:00	6	8.00	1.600	6.370	195.60	25.78	5.41	343.74
GSCM3	B	8/8/96 0:00	8/16/96 0:00	7	8.00	1.407	5.602	163.95	24.66	9.80	208.69
GSCM3	B	8/16/96 0:00	8/24/96 0:00	8	26.38	2.400	2.898	145.67	16.17	2.84	172.97
GSCM3	C	9/13/96 0:00	9/28/96 18:00	1	15.75	0.785	1.587	105.14	11.48	2.54	108.09
GSCM3	C	9/28/96 18:00	10/14/96 12:00	2	15.75	0.713	1.442	86.04	10.15	1.69	110.02
GSCM3	C	10/14/96 12:00	10/30/96 6:00	3	15.75	1.431	2.894	89.71	10.56	4.48	112.99
GSCM3	C	10/30/96 6:00	11/15/96 0:00	4	15.75	1.550	3.133	70.77	8.19	4.36	107.36
GSCM3	C	11/15/96 0:00	11/30/96 18:00	5	15.75	3.601	7.282	132.23	15.10	15.51	169.66
GSCM3	C	11/30/96 18:00	12/16/96 12:00	6	15.75	4.033	8.155	143.92	15.62	15.90	217.67
GSCM3	C	12/16/96 12:00	1/1/97 6:00	7	15.75	1.621	3.279	77.94	8.71	7.15	129.98
GSCM3	C	1/1/97 6:00	1/17/97 0:00	8	15.75	4.186	8.465	146.11	15.73	16.08	221.35
GSCM3	C	1/17/97 0:00	2/1/97 18:00	9	15.75	5.683	11.492	211.99	22.59	19.65	329.31
GSCM3	C	2/1/97 18:00	2/17/97 12:00	10	15.75	5.850	11.830	176.54	17.22	16.21	210.65
GSCM3	D	2/21/97 12:00	3/2/97 21:00	1	9.38	0.592	2.011	70.90	8.93	1.77	85.74
GSCM3	D	3/2/97 21:00	3/12/97 6:00	2	9.38	2.879	9.779	187.79	20.88	13.59	260.44
GSCM3	D	3/12/97 6:00	3/21/97 15:00	3	9.38	2.552	8.670	212.65	25.37	8.41	357.19
GSCM3	D	3/21/97 15:00	3/31/97 0:00	4	9.38	1.418	4.818	116.89	13.84	2.75	281.62
GSCM3	D	3/31/97 0:00	4/9/97 9:00	5	9.38	1.418	4.817	89.90	10.98	6.07	178.42
GSCM3	D	4/9/97 9:00	4/18/97 18:00	6	9.38	3.166	10.756	260.37	34.92	8.07	704.89

Appendix 2. Flux Data.

STATION		DATE START mm/dd/yy	DATE END mm/dd/yy	CUP #	INTERVAL days	TOTAL DRY WEIGHT g/cup	TOTAL DRY WEIGHT FLUX $g/m^2/d$	ORGANIC CARBON FLUX $g/m^2/d$	TOTAL NITROGEN FLUX $g/m^2/d$	CARBONATE CARBON FLUX $g/m^2/d$	BIOGENIC SILICA FLUX $g/m^2/d$
GSCM3	D	4/18/97 18:00	4/28/97 3:00	7	9.38	1.047	3.556	140.77	22.13	1.96	394.54
GSCM3	D	4/28/97 3:00	5/7/97 12:00	8	9.38	8.056	27.366	361.00	44.07	26.27	847.23
GSCM3	D	5/7/97 12:00	5/16/97 21:00	9	9.38	8.636	29.337	390.18	48.29	24.64	1179.67
GSCM3	D	5/16/97 21:00	5/26/97 6:00	10	9.38	26.980	91.652	808.37	95.09	183.30	1447.34
GSCM3	E	5/31/97 0:00	6/12/97 12:00	1	12.50	14.876	37.900	391.44	45.64	23.88	1006.38
GSCM3	E	6/12/97 12:00	6/25/97 0:00	2	12.50	15.097	38.463	411.65	56.53	31.54	782.96
GSCM3	E	6/25/97 0:00	7/7/97 12:00	3	12.50	5.946	15.150	191.41	23.94	19.85	519.08
GSCM3	E	7/7/97 12:00	7/20/97 0:00	4	12.50	3.717	9.471	161.72	19.47	7.77	327.16
GSCM3	E	7/20/97 0:00	8/1/97 12:00	5	12.50	11.476	29.237	273.13	34.54	53.50	543.55
GSCM3	E	8/1/97 12:00	8/14/97 0:00	6	12.50	2.458	6.263	176.92	21.67	8.02	172.87
GSCM3	E	8/14/97 0:00	8/26/97 12:00	7	12.50	2.938	7.484	245.12	28.15	8.53	337.99
GSCM3	E	8/26/97 12:00	9/8/97 0:00	8	12.50	3.918	9.982	243.63	27.19	10.38	309.41
GSCM3	E	9/8/97 0:00	9/20/97 12:00	9	12.50	2.238	5.702	198.98	25.28	5.87	201.27
GSCM3	E	9/20/97 12:00	10/3/97 0:00	10	12.50	3.017	7.686	235.19	27.51	8.15	302.60
GSCM3	F	10/6/97 0:00	10/18/97 18:00	1	12.75	4.601	11.492	191.04	21.51	11.61	228.79
GSCM3	F	10/18/97 18:00	10/31/97 12:00	2	12.75	4.288	10.712	164.09	21.34	19.28	221.47
GSCM3	F	10/31/97 12:00	11/13/97 6:00	3	12.75	1.360	3.396	88.48	10.71	3.23	147.95
GSCM3	F	11/13/97 6:00	11/26/97 0:00	4	12.75	5.079	12.686	178.26	21.95	14.46	286.06
GSCM3	F	11/26/97 0:00	12/8/97 18:00	5	12.75	2.990	7.469	172.08	22.17	6.20	274.16
GSCM3	F	12/8/97 18:00	12/21/97 12:00	6	12.75	5.567	13.905	222.17	23.04	20.72	352.73
GSCM3	F	12/21/97 12:00	1/3/98 6:00	7	12.75	4.726	11.805	201.27	21.70	11.57	330.07
GSCM3	F	1/3/98 6:00	1/16/98 0:00	8	12.75	4.464	11.150	168.18	17.97	15.05	268.66
GSCM3	F	1/16/98 0:00	1/28/98 18:00	9	12.75	3.210	8.019	142.19	16.57	6.25	175.31
GSCM3	F	1/28/98 18:00	2/10/98 12:00	10	12.75	9.018	22.526	328.69	33.28	27.93	487.81

Appendix 2. Flux Data.

STATION		DATE START mm/dd/yy	DATE END mm/dd/yy	CUP #	INTERVAL days	TOTAL DRY WEIGHT g/cup	TOTAL DRY WEIGHT FLUX $g/m^2/d$	ORGANIC CARBON FLUX $g/m^2/d$	TOTAL NITROGEN FLUX $g/m^2/d$	CARBONATE CARBON FLUX $g/m^2/d$	BIOGENIC SILICA FLUX $g/m^2/d$
GSCM2	A	3/4/96 0:00	3/14/96 12:00	1	10.50	11.223	34.039	694.91	75.78	16.68	1578.23
GSCM2	A	3/14/96 12:00	3/25/96 0:00	2	10.50	12.585	38.171	711.40	87.44	7.63	2285.72
GSCM2	A	3/25/96 0:00	4/4/96 12:00	3	10.50	16.198	49.130	714.25	81.43	37.83	2206.89
GSCM2	A	4/4/96 12:00	4/15/96 0:00	4	10.50	15.152	45.958	736.47	91.91	22.06	2097.47
GSCM2	A	4/15/96 0:00	4/25/96 12:00	5	10.50	10.158	30.810	632.26	66.00	25.57	1510.58
GSCM2	A	4/25/96 12:00	5/6/96 0:00	6	10.50	7.862	23.846	434.33	52.26	20.75	1017.20
GSCM2	A	5/6/96 0:00	5/16/96 12:00	7	10.50	30.871	93.634	1419.96	164.57	98.32	4042.95
GSCM2	A	5/16/96 12:00	5/27/96 0:00	8	10.50	19.457	59.014	1055.23	131.06	31.87	2373.73
GSCM2	A	5/27/96 0:00	6/6/96 12:00	9	10.50	20.800	63.088	1042.84	143.38	71.29	2650.35
GSCM2	A	6/6/96 12:00	6/17/96 0:00	10	10.50	9.992	30.306	470.92	63.36	14.85	1594.30
GSCM2	B	6/21/96 0:00	6/29/96 0:00	1	8.00	42.706	170.008	2338.63	288.52	256.71	5239.06
GSCM2	B	6/29/96 0:00	7/7/96 0:00	2	8.00	12.546	49.946	843.29	102.51	50.94	2617.74
GSCM2	B	7/7/96 0:00	7/15/96 0:00	3	8.00	16.492	65.653	1203.87	169.59	64.34	2534.86
GSCM2	B	7/15/96 0:00	7/23/96 0:00	4	8.00	18.134	72.189	990.08	144.12	60.64	2517.03
GSCM2	B	7/23/96 0:00	7/31/96 0:00	5	8.00	20.306	80.838	1161.96	112.49	69.52	2114.29
GSCM2	B	7/31/96 0:00	8/8/96 0:00	6	8.00	15.207	60.538	586.85	142.85	563.00	2696.99
GSCM2	B	8/8/96 0:00	8/16/96 0:00	7	8.00	5.927	23.596	592.34	81.41	32.56	1331.17
GSCM2	B	8/16/96 0:00	8/24/96 0:00	8	8.00	13.340	53.103	936.42	128.73	61.07	2367.38
GSCM2	B	8/24/96 0:00	9/1/96 0:00	9	8.00	8.015	31.906	735.88	96.39	44.99	1520.93
GSCM2	B	9/1/96 0:00	9/9/96 0:00	10	8.00						
GSCM2	C	9/13/96 0:00	9/28/96 18:00	1	15.75	15.986	32.324	676.34	78.86	39.76	1348.91
GSCM2	C	9/28/96 18:00	10/14/96 12:00	2	15.75	16.157	32.669	533.74	63.23	38.22	1556.53
GSCM2	C	10/14/96 12:00	10/30/96 6:00	3	15.75	13.439	27.175	520.97	60.47	29.62	1433.50
GSCM2	C	10/30/96 6:00	11/15/96 0:00	4	15.75	35.386	71.553	1128.53	134.72	92.30	2602.78
GSCM2	C	11/15/96 0:00	11/30/96 18:00	5	15.75	44.631	90.246	1623.14	189.80	107.39	3833.52
GSCM2	C	11/30/96 18:00	12/16/96 12:00	6	15.75	16.934	34.242	641.26	73.11	33.56	1022.94
GSCM2	C	12/16/96 12:00	1/1/97 6:00	7	15.75	25.729	52.025	1015.64	118.42	55.15	2468.06
GSCM2	C	1/1/97 6:00	1/17/97 0:00	8	15.75	23.412	47.340	946.27	105.71	59.17	1883.03
GSCM2	C	1/17/97 0:00	2/1/97 18:00	9	15.75	31.221	63.131	1502.37	166.76	51.14	2872.50
GSCM2	C	2/1/97 18:00	2/17/97 12:00	10	15.75	24.723	49.992	1119.37	122.88	44.99	2176.23
GSCM2	D	2/21/97 12:00	3/2/97 21:00	1	9.38	15.976	54.270	1204.92	134.90	66.21	3074.63
GSCM2	D	3/2/97 21:00	3/12/97 6:00	2	9.38	21.909	74.425	1479.13	171.67	98.61	2833.54
GSCM2	D	3/12/97 6:00	3/21/97 15:00	3	9.38	11.753	39.924	936.22	108.80	50.30	2029.91
GSCM2	D	3/21/97 15:00	3/31/97 0:00	4	9.38	9.343	31.738	768.26	89.08	30.47	1619.61

Appendix 2. Flux Data.

STATION		DATE START mm/dd/yy	DATE END mm/dd/yy	CUP #	INTERVAL days	TOTAL DRY WEIGHT g/cup	TOTAL DRY WEIGHT FLUX $g/m^2/d$	ORGANIC CARBON FLUX $g/m^2/d$	TOTAL NITROGEN FLUX $g/m^2/d$	CARBONATE CARBON FLUX $g/m^2/d$	BIOGENIC SILICA FLUX $g/m^2/d$
GSCM2	D	3/31/97 0:00	4/9/97 9:00	5	9.38	16.837	57.196	1185.05	134.10	68.64	2608.54
GSCM2	D	4/9/97 9:00	4/18/97 18:00	6	9.38	16.023	54.429	1170.13	143.41	55.52	3162.12
GSCM2	D	4/18/97 18:00	4/28/97 3:00	7	9.38	18.049	61.312	1050.41	127.39	72.35	2774.38
GSCM2	D	4/28/97 3:00	5/7/97 12:00	8	9.38	8.770	29.793	743.73	95.03	29.20	2005.99
GSCM2	D	5/7/97 12:00	5/16/97 21:00	9	9.38	16.174	54.944	1193.12	148.24	58.24	3501.81
GSCM2	D	5/16/97 21:00	5/26/97 6:00	10	9.38	29.845	101.385	1715.52	211.98	129.77	4021.75
GSCM2	E	5/31/97 0:00	6/12/97 12:00	1	12.50	21.801	55.544	908.10	122.98	77.21	4528.41
GSCM2	E	6/12/97 12:00	6/25/97 0:00	2	12.50	25.521	65.022	1107.98	159.92	96.88	2905.37
GSCM2	E	6/25/97 0:00	7/7/97 12:00	3	12.50	38.744	98.711	1674.12	215.68	133.26	5534.04
GSCM2	E	7/7/97 12:00	7/20/97 0:00	4	12.50	18.659	47.538	835.22	112.33	65.60	2038.69
GSCM2	E	7/20/97 0:00	8/1/97 12:00	5	12.50	31.451	80.129	1221.38	157.64	114.58	3973.02
GSCM2	E	8/1/97 12:00	8/14/97 0:00	6	12.50	20.771	52.920	916.04	119.20	54.51	2248.05
GSCM2	E	8/14/97 0:00	8/26/97 12:00	7	12.50	16.619	42.342	748.67	100.49	59.28	1909.48
GSCM2	E	8/26/97 12:00	9/8/97 0:00	8	12.50	10.562	26.911	549.80	64.34	32.29	1107.88
GSCM2	E	9/8/97 0:00	9/20/97 12:00	9	12.50	16.860	42.955	724.99	87.18	71.31	1994.27
GSCM2	E	9/20/97 12:00	10/3/97 0:00	10	12.50	12.069	30.749	716.94	90.89	20.29	1341.48
GSCM2	F	10/6/97 0:00	10/18/97 18:00	1	12.75	14.318	35.763	734.50	88.05	29.68	1389.02
GSCM2	F	10/18/97 18:00	10/31/97 12:00	2	12.75	29.031	72.514	1342.16	165.83	84.12	2743.07
GSCM2	F	10/31/97 12:00	11/13/97 6:00	3	12.75	23.140	57.800	1057.36	128.01	60.11	2198.65
GSCM2	F	11/13/97 6:00	11/26/97 0:00	4	12.75	53.119	132.682	2031.82	241.59	156.56	4251.04
GSCM2	F	11/26/97 0:00	12/8/97 18:00	5	12.75	29.668	74.104	1352.10	166.22	72.62	2897.27
GSCM2	F	12/8/97 18:00	12/21/97 12:00	6	12.75	41.351	103.286	1415.02	177.92	127.04	3743.52
GSCM2	F	12/21/97 12:00	1/3/98 6:00	7	12.75	37.376	93.358	1496.73	178.43	85.89	2975.61
GSCM2	F	1/3/98 6:00	1/16/98 0:00	8	12.75	55.174	137.814	2003.74	247.40	161.24	4056.39
GSCM2	F	1/16/98 0:00	1/28/98 18:00	9	12.75	20.869	52.127	892.35	111.19	58.90	1870.44
GSCM2	F	1/28/98 18:00	2/10/98 12:00	10	12.75	35.027	87.490	1570.44	201.42	108.49	2816.87

Appendix 2. Flux Data.

STATION	DATE START mm/dd/yy	DATE END mm/dd/yy	CUP #	INTERVAL days	TOTAL DRY WEIGHT g/cup	TOTAL DRY WEIGHT FLUX $g/m^2/d$	ORGANIC CARBON FLUX $g/m^2/d$	TOTAL NITROGEN FLUX $g/m^2/d$	CARBONATE CARBON FLUX $g/m^2/d$	BIOGENIC SILICA FLUX $g/m^2/d$
GSCM3-G-150	2/14/98 0:00	2/24/98 18:00	1	10.75	2.659	7.877	177.29	16.78	6.46	204.40
GSCM3-G-150	2/24/98 18:00	3/7/98 12:00	2	10.75	5.491	16.267	348.95	36.98	12.53	571.08
GSCM3-G-150	3/7/98 12:00	3/18/98 6:00	3	10.75	5.218	15.457	426.12	53.28	12.98	1032.54
GSCM3-G-150	3/18/98 6:00	3/29/98 0:00	4	10.75	3.931	11.646	395.70	54.50	7.10	1187.27
GSCM3-G-150	3/29/98 0:00	4/8/98 18:00	5	10.75	3.732	11.055	273.33	31.15	5.75	741.01
GSCM3-G-150	4/8/98 18:00	4/19/98 12:00	6	10.75	2.530	7.496	254.99	29.48	6.75	552.39
GSCM3-G-150	4/19/98 12:00	4/30/98 6:00	7	10.75	2.272	6.730	208.90	25.96	5.85	518.55
GSCM3-G-150	4/30/98 6:00	5/11/98 0:00	8	10.75	3.488	10.332	195.89	23.79	6.20	512.00
GSCM3-G-150	5/11/98 0:00	5/21/98 18:00	9	10.75	4.027	11.930	282.57	34.69	7.87	624.37
GSCM3-G-150	5/21/98 18:00	5/31/1998 13:25	10	9.809						
GSCM3-H-150	6/2/98 0:00	6/14/98 6:00	1	12.25	4.389	11.411	270.42	32.44	20.20	708.90
GSCM3-H-150	6/14/98 6:00	6/26/98 12:00	2	12.25	2.793	7.261	133.21	16.99	23.09	255.90
GSCM3-H-150	6/26/98 12:00	7/8/98 18:00	3	12.25	1.845	4.795	110.45	14.90	11.65	151.53
GSCM3-H-150	7/8/98 18:00	7/21/98 0:00	4	12.25	2.550	6.630	170.85	22.27	8.62	279.52
GSCM3-H-150	7/21/98 0:00	8/2/98 6:00	5	12.25	1.516	3.941	124.09	16.96	5.68	151.44
GSCM3-H-150	8/2/98 6:00	8/14/98 12:00	6	12.25	2.045	5.316	162.95	21.70	7.18	228.40
GSCM3-H-150	8/14/98 12:00	8/26/98 18:00	7	12.25	0.794	2.064	100.97	14.27	6.81	140.82
GSCM3-H-150	8/26/98 18:00	9/8/98 0:00	8	12.25	0.352	0.914	58.51	8.42	2.50	81.46
GSCM3-H-150	9/8/98 0:00	9/20/98 6:00	9	12.25	0.545	1.416	73.32	10.49	4.59	120.51
GSCM3-H-150	9/20/98 6:00	10/2/98 12:00	10	12.25	0.218	0.566	42.47	6.28	1.53	51.32
GSCM3-I-150	10/4/98 0:00	10/14/98 18:00	1	10.750	0.840	2.488	101.48	13.42	7.41	116.24
GSCM3-I-150	10/14/98 18:00	10/25/98 12:00	2	10.750	0.643	1.906	71.91	9.25	4.82	98.77
GSCM3-I-150	10/25/98 12:00	11/5/98 6:00	3	10.750	0.648	1.921	81.96	11.14	2.88	144.51
GSCM3-I-150	11/5/98 6:00	11/16/98 0:00	4	10.750	1.217	3.604	95.27	12.33	7.39	146.61
GSCM3-I-150	11/16/98 0:00	11/26/98 18:00	5	10.750	2.174	6.439	135.21	15.00	7.86	207.52
GSCM3-I-150	11/26/98 18:00	12/7/98 12:00	6	10.750	1.948	5.770	90.64	9.02	6.81	138.95
GSCM3-I-150	12/7/98 12:00	12/18/98 6:00	7	10.750	2.962	8.774	154.13	15.83	8.69	213.65
GSCM3-I-150	12/18/98 6:00	12/29/98 0:00	8	10.750	1.128	3.342	83.76	10.06	3.94	118.11
GSCM3-I-150	12/29/98 0:00	1/8/99 18:00	9	10.750	2.095	6.206	120.29	13.02	3.97	183.91
GSCM3-I-150	1/8/99 18:00	1/19/99 12:00	10	10.750	3.848	11.401	227.99	24.58	7.52	357.90

Appendix 2. Flux Data.

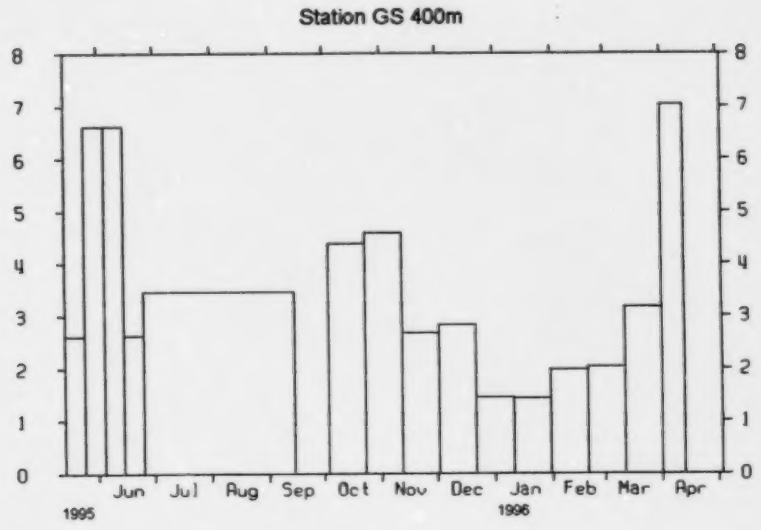
STATION	DATE START mm/dd/yy	DATE END mm/dd/yy	CUP #	INTERVAL days	TOTAL DRY WEIGHT g/cup	TOTAL DRY WEIGHT FLUX $g/m^2/d$	ORGANIC CARBON FLUX $g/m^2/d$	TOTAL NITROGEN FLUX $g/m^2/d$	CARBONATE CARBON FLUX $g/m^2/d$	BIOGENIC SILICA FLUX $g/m^2/d$
GSCM3-G-225	2/14/98 0:00	2/24/98 18:00	1	10.75	1.640	4.858	121.93	14.02	3.40	166.37
GSCM3-G-225	2/24/98 18:00	3/7/98 12:00	2	10.75	1.581	4.682	107.89	11.67	3.51	198.95
GSCM3-G-225	3/7/98 12:00	3/18/98 6:00	3	10.75	2.540	7.524	234.55	30.83	3.99	484.06
GSCM3-G-225	3/18/98 6:00	3/29/98 0:00	4	10.75	2.899	8.588	272.27	35.94	4.90	791.34
GSCM3-G-225	3/29/98 0:00	4/8/98 18:00	5	10.75	1.814	5.373	146.29	16.91	3.22	286.57
GSCM3-G-225	4/8/98 18:00	4/19/98 12:00	6	10.75	2.122	6.286	203.39	25.58	4.02	436.20
GSCM3-G-225	4/19/98 12:00	4/30/98 6:00	7	10.75	1.283	3.801	127.05	16.23	2.28	258.83
GSCM3-G-225	4/30/98 6:00	5/11/98 0:00	8	10.75	2.622	7.769	183.56	23.71	3.50	336.81
GSCM3-G-225	5/11/98 0:00	5/21/98 18:00	9	10.75	1.436	4.254	164.68	29.10	3.66	251.61
GSCM3-G-225	5/21/98 18:00	5/31/1998 13:25	10	9.809	1.113	3.612	102.95	16.28	3.72	222.78
GSCM3-H-225	6/2/98 0:00	6/14/98 6:00	1	12.25	4.882	12.692	245.36	30.18	17.13	848.25
GSCM3-H-225	6/14/98 6:00	6/26/98 12:00	2	12.25	3.013	7.834	149.58	19.71	18.68	345.25
GSCM3-H-225	6/26/98 12:00	7/8/98 18:00	3	12.25	2.304	5.990	124.81	15.80	7.61	220.98
GSCM3-H-225	7/8/98 18:00	7/21/98 0:00	4	12.25	2.831	7.361	176.50	23.25	13.91	327.91
GSCM3-H-225	7/21/98 0:00	8/2/98 6:00	5	12.25	1.963	5.104	159.67	22.21	5.10	272.57
GSCM3-H-225	8/2/98 6:00	8/14/98 12:00	6	12.25	2.580	6.706	189.32	23.54	7.51	325.91
GSCM3-H-225	8/14/98 12:00	8/26/98 18:00	7	12.25	1.411	3.668	124.12	16.10	5.43	226.68
GSCM3-H-225	8/26/98 18:00	9/8/98 0:00	8	12.25	0.892	2.318	83.37	10.63	3.94	191.84
GSCM3-H-225	9/8/98 0:00	9/20/98 6:00	9	12.25	1.395	3.626	145.97	22.54	5.80	248.29
GSCM3-H-225	9/20/98 6:00	10/2/98 12:00	10	12.25	0.815	2.120	98.76	13.67	4.96	171.80
GSCM3-I-225	10/4/98 0:00	10/14/98 18:00	1	10.750	1.241	3.675	98.13	12.07	2.21	172.00
GSCM3-I-225	10/14/98 18:00	10/25/98 12:00	2	10.750	0.994	2.945	97.19	12.27	3.77	153.73
GSCM3-I-225	10/25/98 12:00	11/5/98 6:00	3	10.750	0.886	2.624	93.04	11.64	1.81	165.28
GSCM3-I-225	11/5/98 6:00	11/16/98 0:00	4	10.750	1.393	4.126	121.87	14.63	2.56	177.58
GSCM3-I-225	11/16/98 0:00	11/26/98 18:00	5	10.750	2.249	6.662	144.28	16.30	6.00	254.79
GSCM3-I-225	11/26/98 18:00	12/7/98 12:00	6	10.750	3.493	10.348	173.04	18.61	9.21	276.42
GSCM3-I-225	12/7/98 12:00	12/18/98 6:00	7	10.750	3.369	9.981	184.72	18.16	7.29	290.02
GSCM3-I-225	12/18/98 6:00	12/29/98 0:00	8	10.750	1.554	4.604	101.32	10.96	3.27	186.64
GSCM3-I-225	12/29/98 0:00	1/8/99 18:00	9	10.750	3.591	10.638	198.12	19.46	8.19	351.71
GSCM3-I-225	1/8/99 18:00	1/19/99 12:00	10	10.750	3.376	10.000	199.32	21.89	7.10	339.67

Appendix 2. Flux Data.

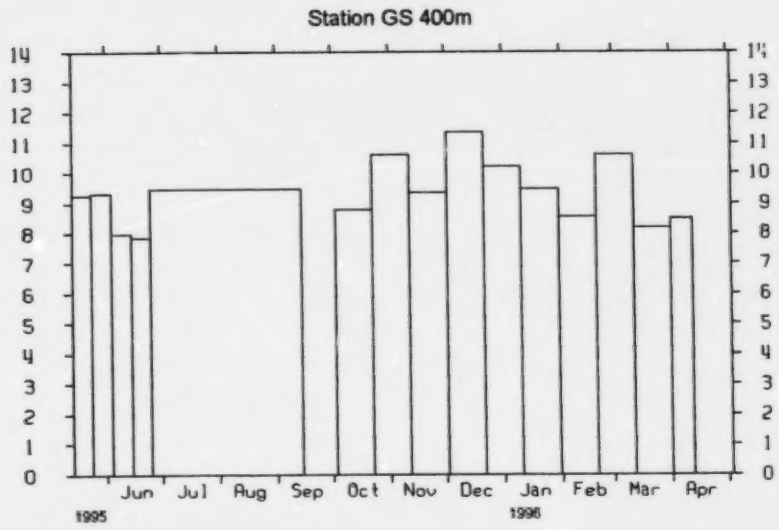
STATION	DATE START mm/dd/yy	DATE END mm/dd/yy	CUP #	INTERVAL days	TOTAL DRY WEIGHT g/cup	TOTAL DRY WEIGHT FLUX $g/m^2/d$	ORGANIC CARBON FLUX $g/m^2/d$	TOTAL NITROGEN FLUX $g/m^2/d$	CARBONATE CARBON FLUX $g/m^2/d$	BIOGENIC SILICA FLUX $g/m^2/d$
GSCM3-G-300	2/14/98 0:00	2/24/98 18:00	1	10.75	3.425	10.146	213.24	24.20	9.13	395.99
GSCM3-G-300	2/24/98 18:00	3/7/98 12:00	2	10.75	3.619	10.722	234.14	27.23	12.97	405.93
GSCM3-G-300	3/7/98 12:00	3/18/98 6:00	3	10.75	4.055	12.014	340.79	44.52	9.13	708.80
GSCM3-G-300	3/18/98 6:00	3/29/98 0:00	4	10.75	4.811	14.253	462.76	64.02	9.55	1241.96
GSCM3-G-300	3/29/98 0:00	4/8/98 18:00	5	10.75	3.839	11.373	302.37	39.50	7.05	606.47
GSCM3-G-300	4/8/98 18:00	4/19/98 12:00	6	10.75	3.017	8.937	259.81	34.29	8.94	614.89
GSCM3-G-300	4/19/98 12:00	4/30/1998 6:00	7	10.75	2.349	6.960	195.58	26.05	4.38	436.04
GSCM3-G-300	4/30/98 6:00	5/11/1998 0:00	8	10.75	3.667	10.864	236.90	31.25	8.26	455.58
GSCM3-G-300	5/11/98 0:00	5/21/1998 18:00	9	10.75	2.348	6.956	172.88	23.73	5.50	352.40
GSCM3-G-300	5/21/98 18:00	5/31/1998 13:25	10	9.809	0.918	2.980	80.18	12.22	2.00	171.70
GSCM3-H-300	6/2/98 0:00	6/14/98 6:00	1	12.25	6.272	16.305	329.78	40.05	18.75	1099.92
GSCM3-H-300	6/14/98 6:00	6/26/98 12:00	2	12.25	3.455	8.982	209.25	27.16	14.55	440.64
GSCM3-H-300	6/26/98 12:00	7/8/98 18:00	3	12.25	2.981	7.750	192.12	25.45	7.75	280.43
GSCM3-H-300	7/8/98 18:00	7/21/98 0:00	4	12.25	3.227	8.390	205.44	26.22	7.63	356.54
GSCM3-H-300	7/21/98 0:00	8/2/98 6:00	5	12.25	2.825	7.345	203.46	26.26	5.14	388.61
GSCM3-H-300	8/2/98 6:00	8/14/98 12:00	6	12.25	3.237	8.415	221.16	27.97	10.69	392.37
GSCM3-H-300	8/14/98 12:00	8/26/98 18:00	7	12.25	2.457	6.388	180.54	23.01	7.86	366.26
GSCM3-H-300	8/26/98 18:00	9/8/98 0:00	8	12.25	1.784	4.639	134.86	17.54	6.22	317.59
GSCM3-H-300	9/8/98 0:00	9/20/98 6:00	9	12.25	3.047	7.922	209.25	26.59	9.59	468.73
GSCM3-H-300	9/20/98 6:00	10/2/98 12:00	10	12.25	2.317	6.025	187.65	24.57	6.81	408.26
GSCM3-I-300	10/4/98 0:00	10/14/98 18:00	1	10.750	3.361	9.956	242.25	27.97	6.67	625.49
GSCM3-I-300	10/14/98 18:00	10/25/98 12:00	2	10.750	2.839	8.412	237.88	28.85	6.06	519.42
GSCM3-I-300	10/25/98 12:00	11/5/98 6:00	3	10.750	2.797	8.286	235.54	27.15	5.05	633.33
GSCM3-I-300	11/5/98 6:00	11/16/98 0:00	4	10.750	4.529	13.418	311.15	35.11	8.99	643.71
GSCM3-I-300	11/16/98 0:00	11/26/98 18:00	5	10.750	4.243	12.571	281.07	32.04	9.30	529.30
GSCM3-I-300	11/26/98 18:00	12/7/98 12:00	6	10.750	6.225	18.441	300.02	33.70	23.97	680.38
GSCM3-I-300	12/7/98 12:00	12/18/98 6:00	7	10.750	4.769	14.129	262.67	29.99	12.43	467.88
GSCM3-I-300	12/18/98 6:00	12/29/98 0:00	8	10.750	3.160	9.362	209.89	23.08	5.34	360.98
GSCM3-I-300	12/29/98 0:00	1/8/99 18:00	9	10.750	5.780	17.123	368.11	42.78	10.96	640.93
GSCM3-I-300	1/8/99 18:00	1/19/99 12:00	10	10.750	4.508	13.354	290.81	32.76	10.02	474.19

Appendix 3. Station GS – May, 1995, to April, 1996.

Total Flux ($g/m^2/day$)

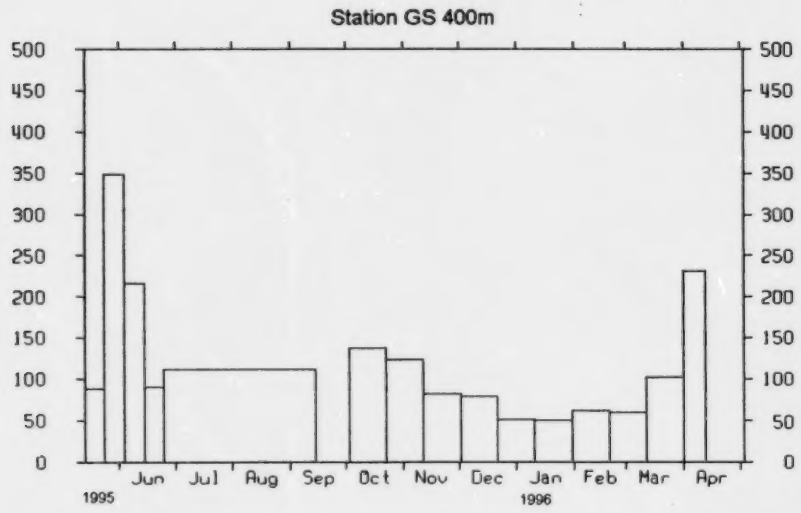


CN Ratio (atomic)

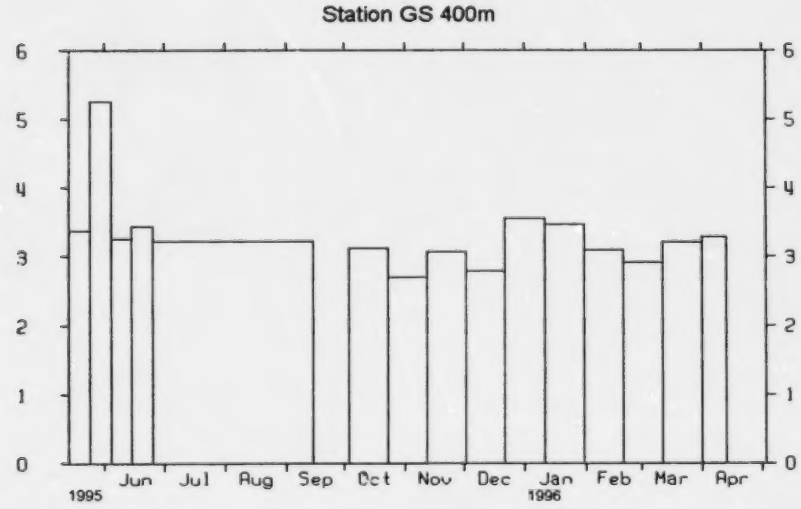


Appendix 3. Station GS – May, 1995,to April, 1996.

Organic Carbon Flux (mg C/m^2/day)

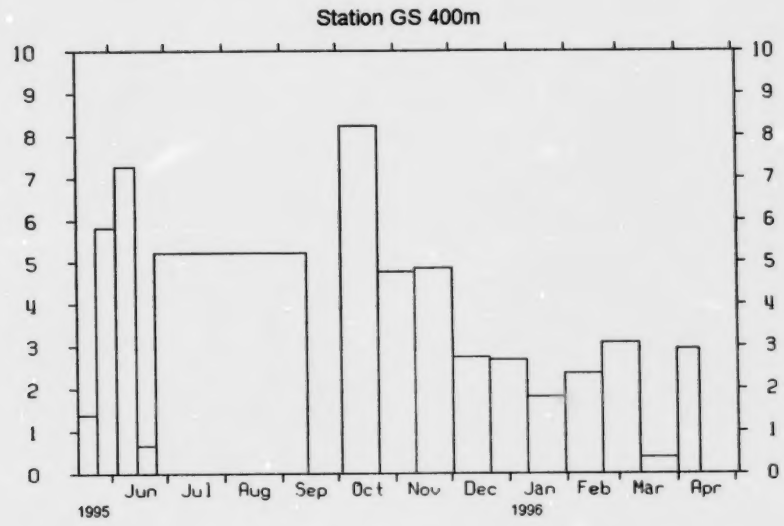


Percent Organic Carbon

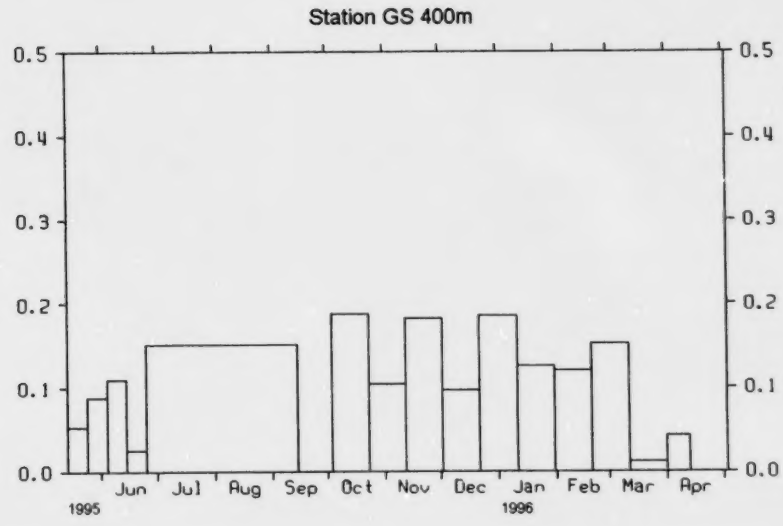


Appendix 3. Station GS – May, 1995,to April, 1996.

Carbonate Carbon Flux (mg C/m^2/day)

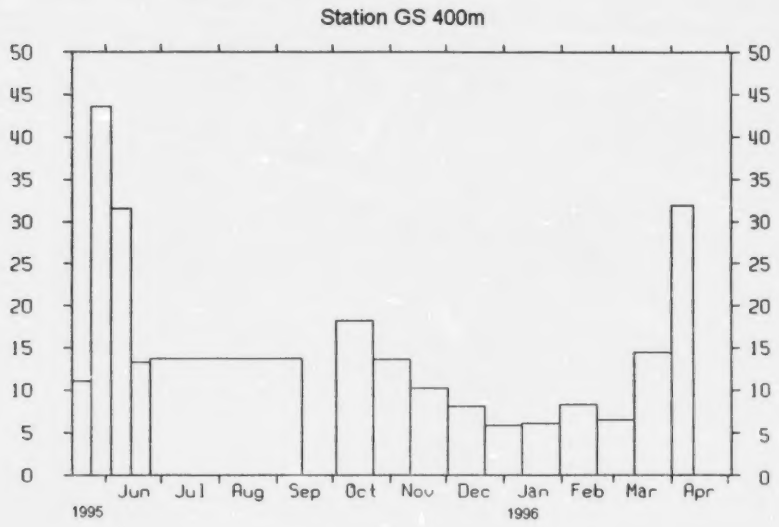


Percent Inorganic Carbon

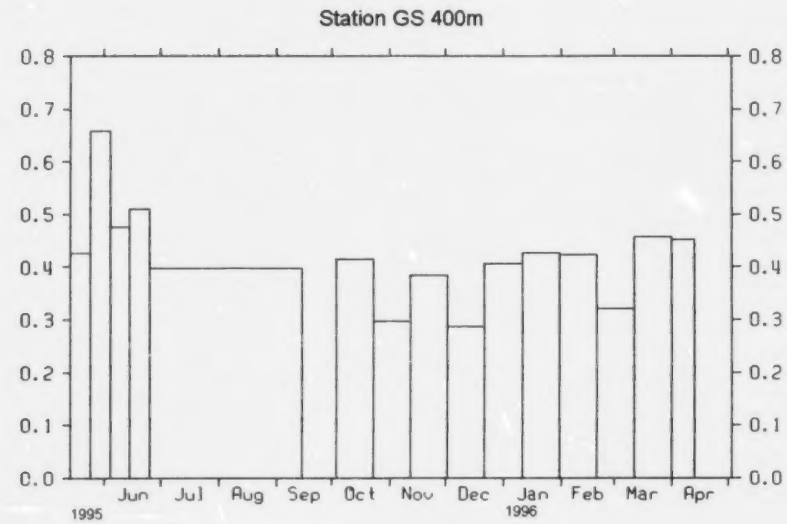


Appendix 3. Station GS – May, 1995 to April, 1996.

Total Nitrogen Flux (mg N/m^2/day)

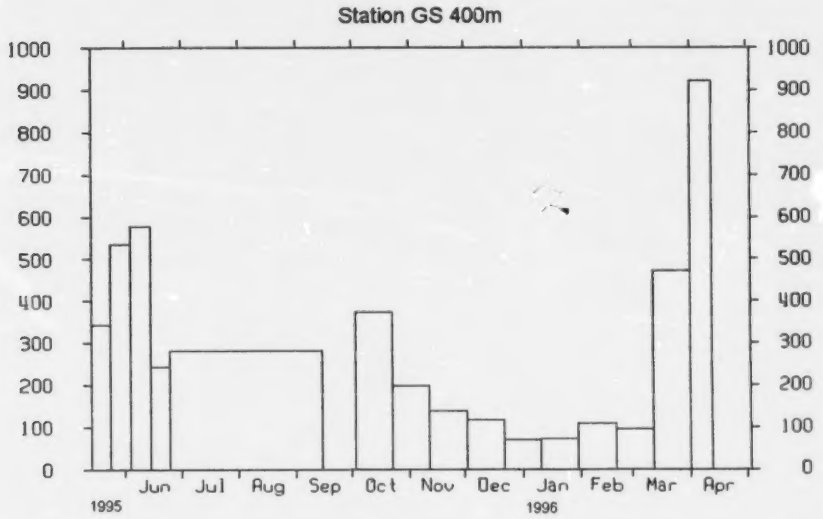


Percent Total Nitrogen

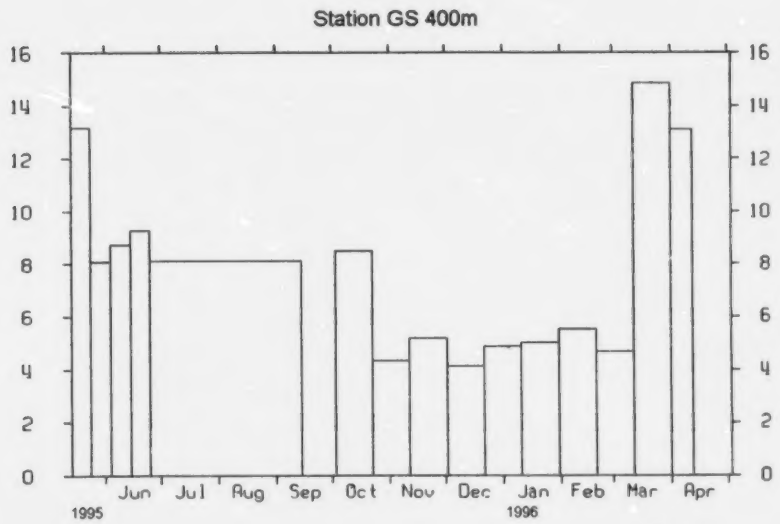


Appendix 3. Station GS – May, 1995, to April, 1996.

Biogenic Si Flux (mg Si/m^2/day)

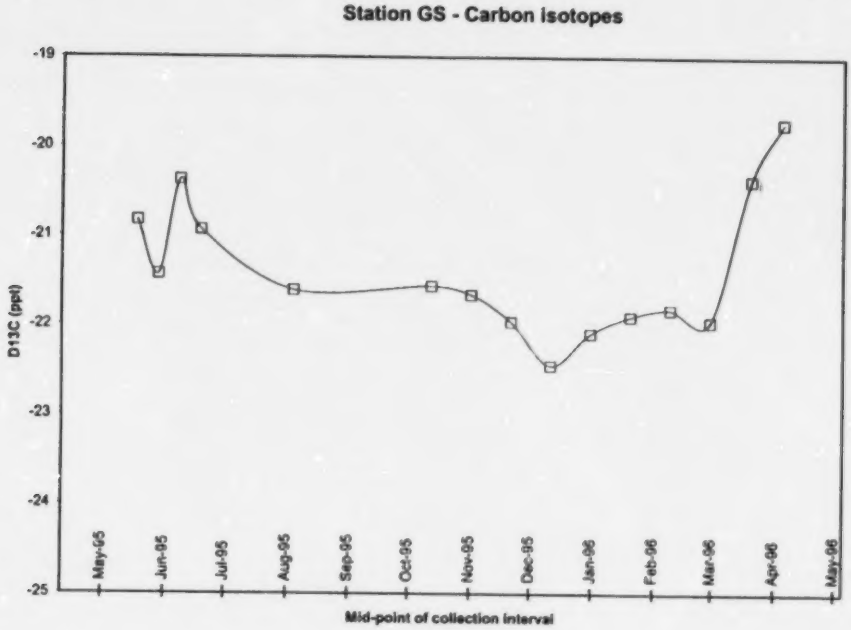


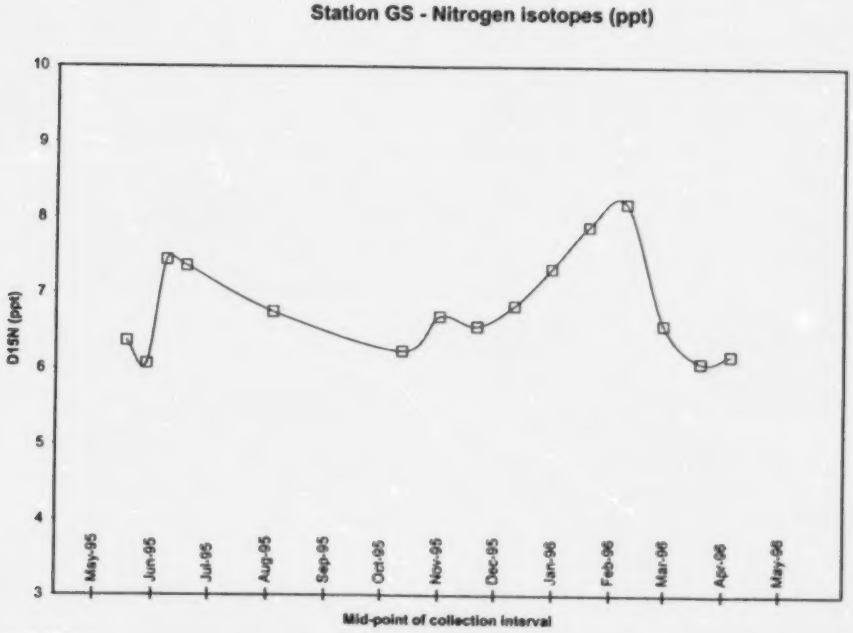
Percent Biogenic Si



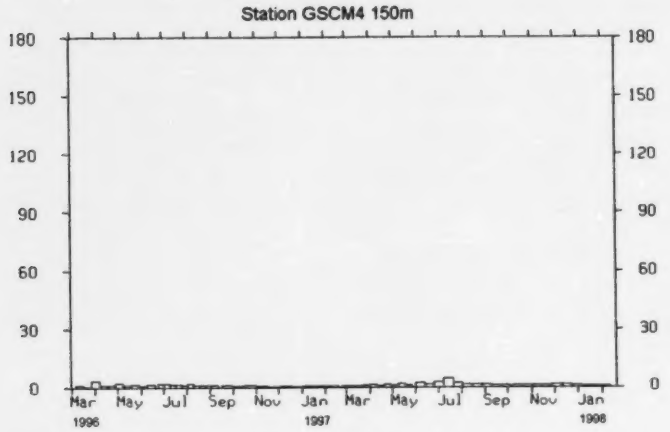
Appendix 3. Station GS – May, 1995, to April, 1996.

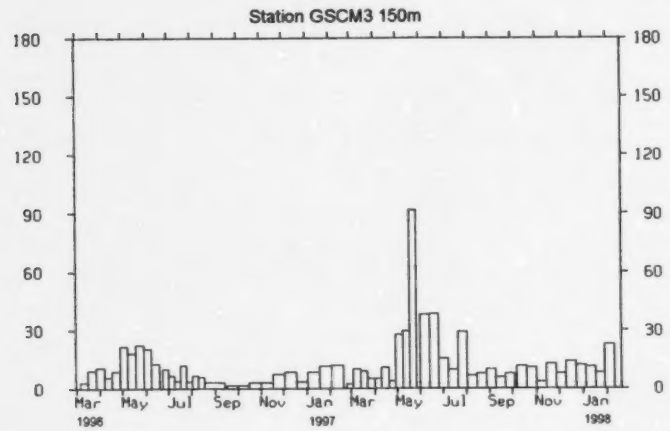
Carbon and nitrogen isotopes

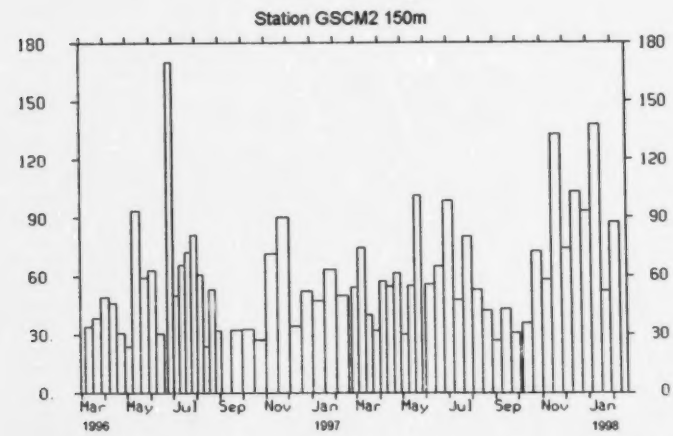




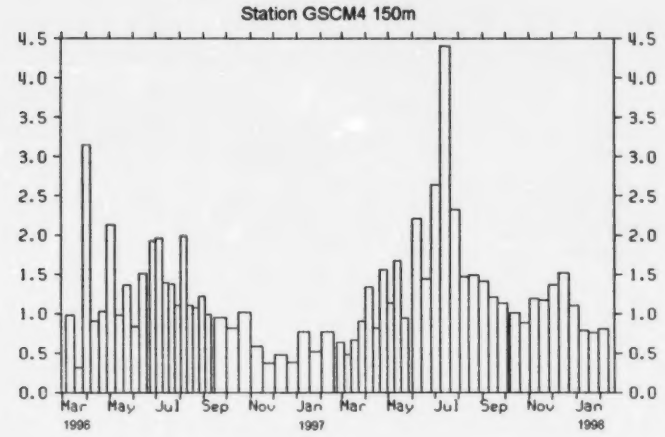
Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996, to February, 1998. Total Flux ($g/m^2/day$) all plots on same scale.

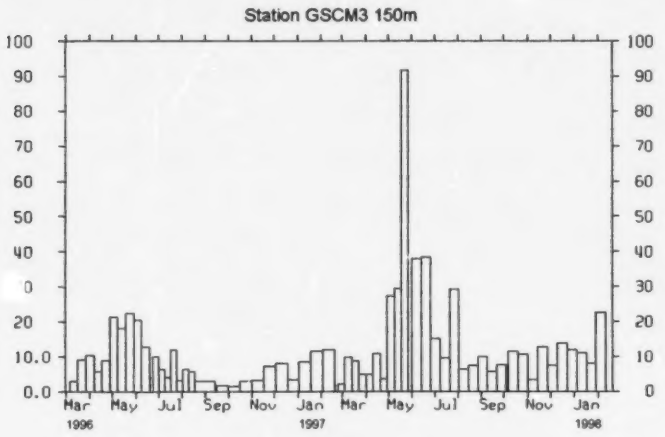


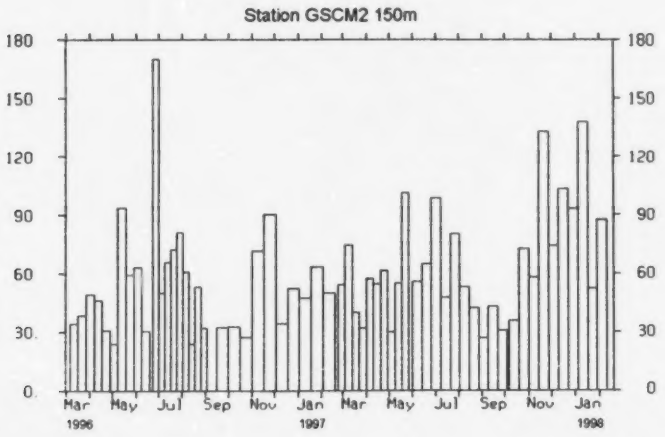




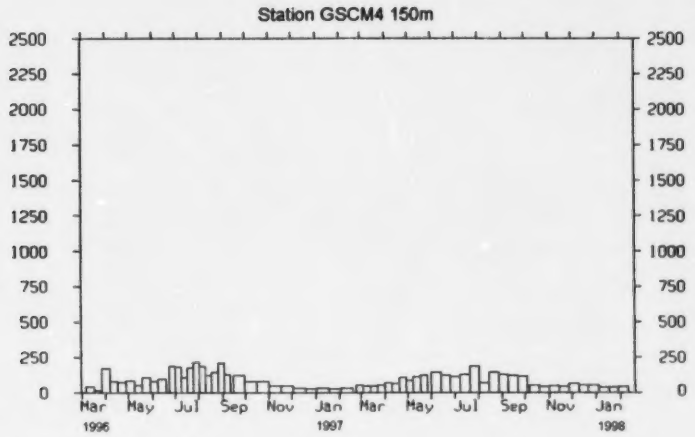
Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996, to February, 1998. Total Flux ($g/m^2/day$) – plots on different scales.

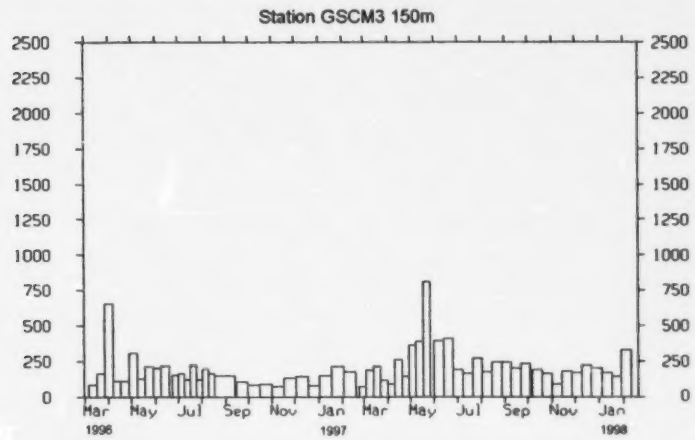


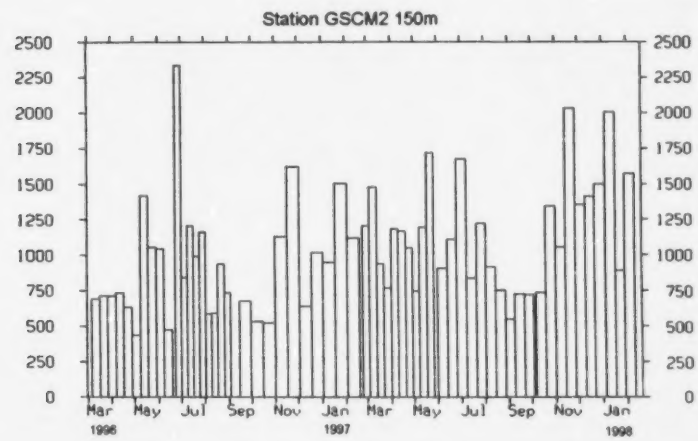




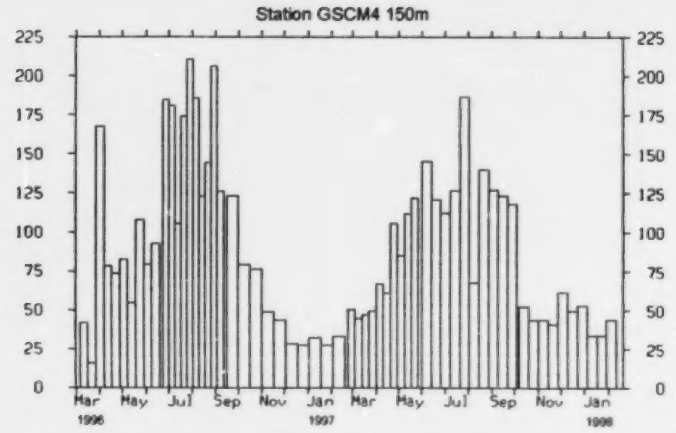
Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996, to February, 1998. Organic Carbon Flux (mg C/m^2/day) all plots on same scale.

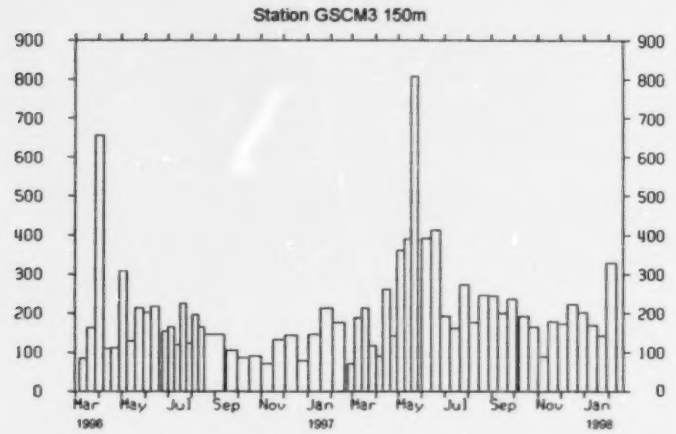


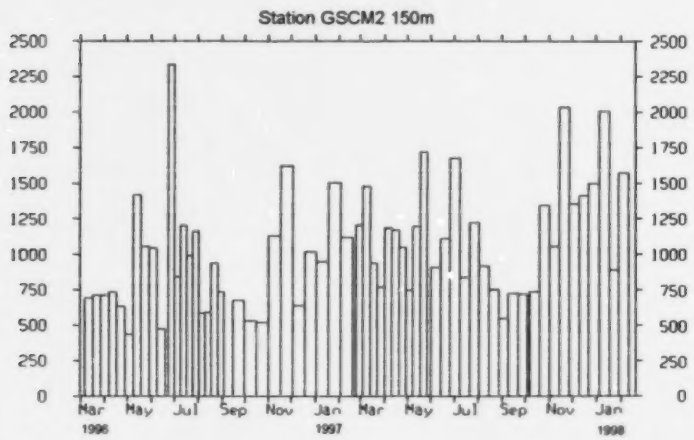




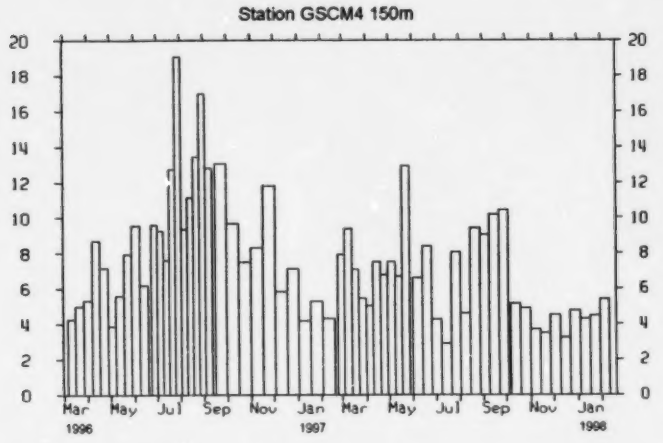
Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996,to February, 1998. Organic Carbon Flux (mg C/m^2/day) – plots on different scales.

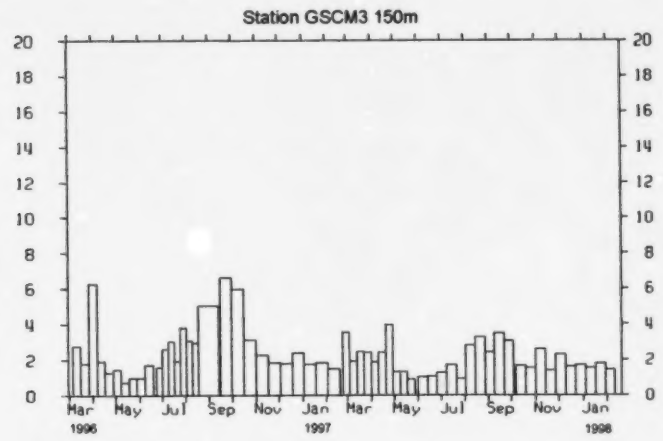


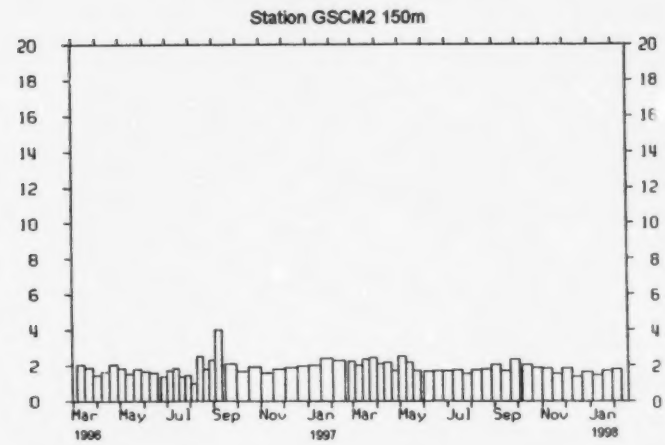




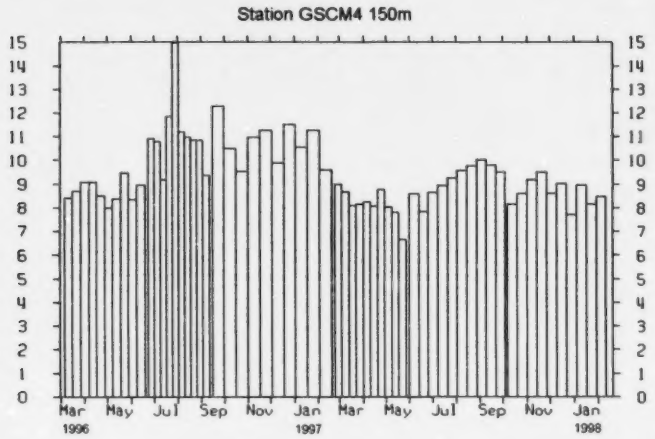
Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996, to February, 1998. Percent Organic Carbon

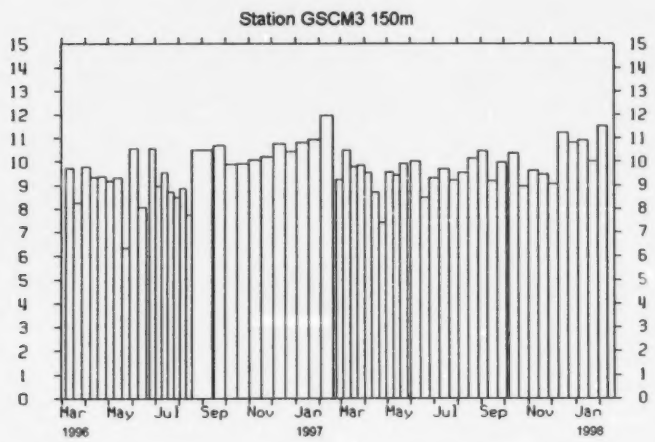


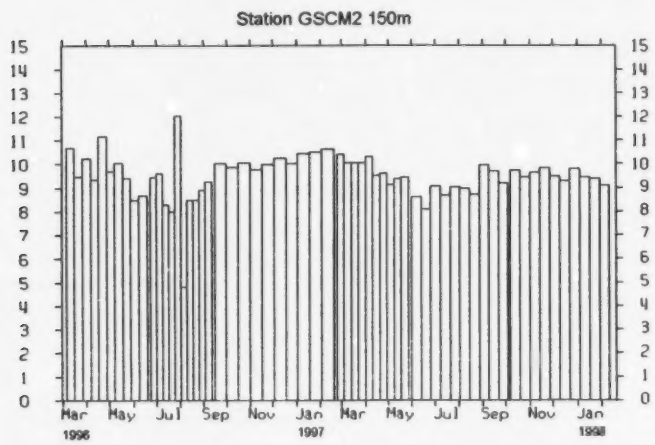




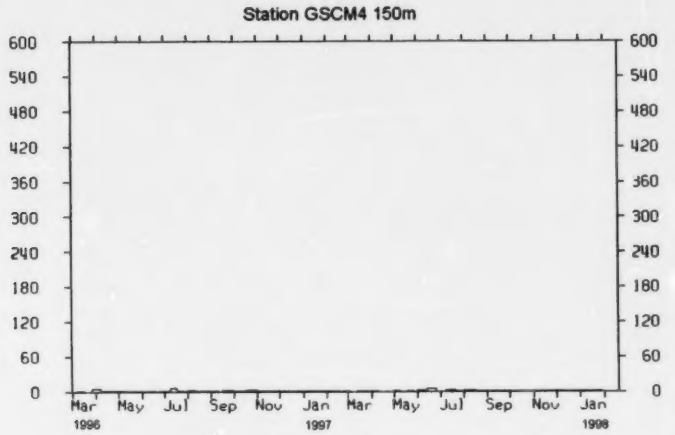
Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996, to February, 1998. CN Ratio (atomic)

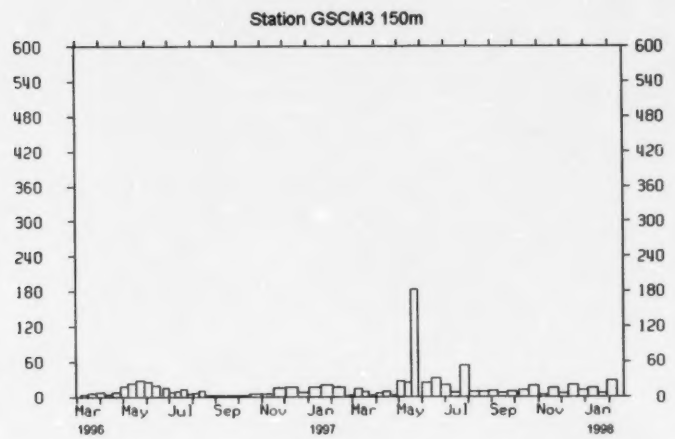


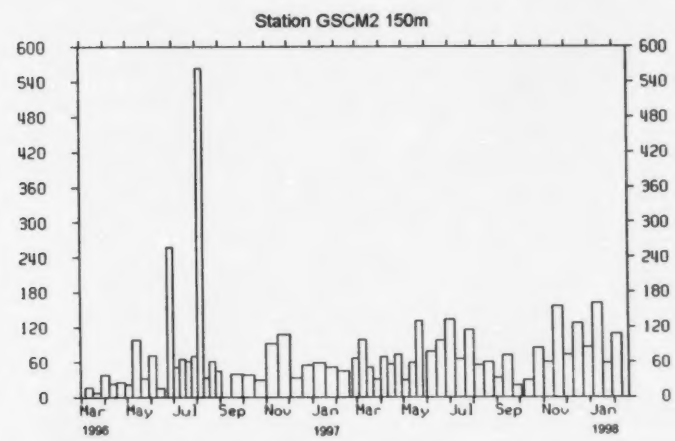




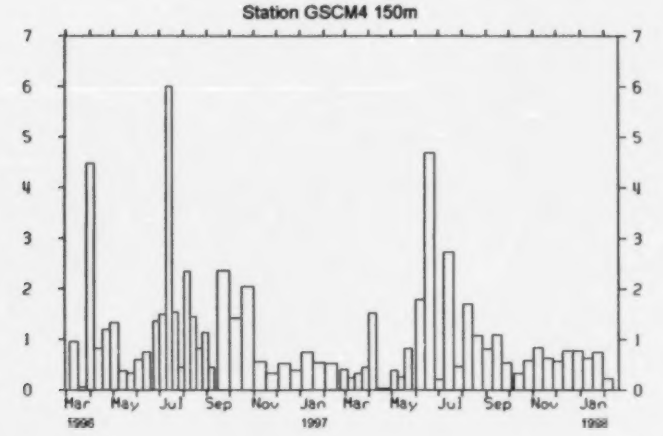
Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996, to February, 1998. Carbonate Carbon Flux (mg C/m^2/day) – all plots on same scale.

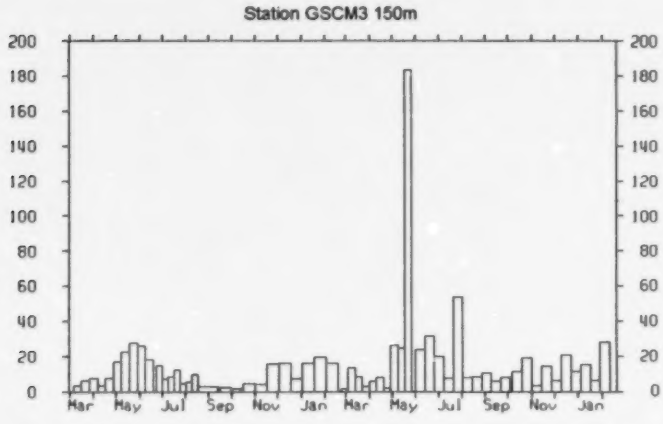


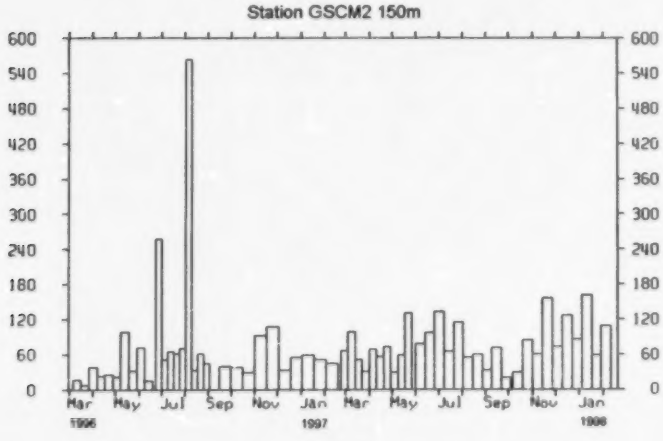




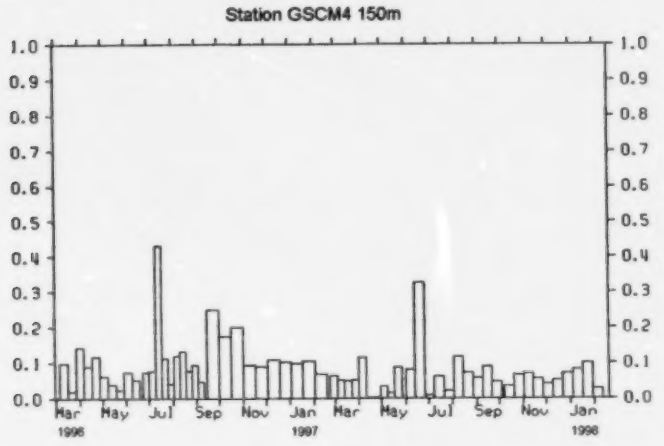
Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996, to February, 1998. Carbonate Carbon Flux (mg C/m^2/day) - plots on different scales.

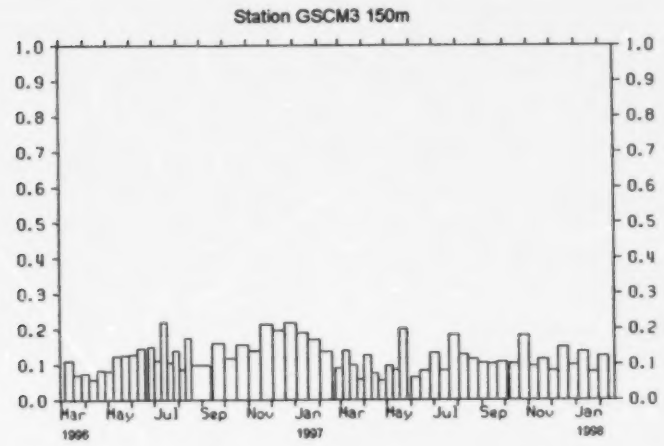


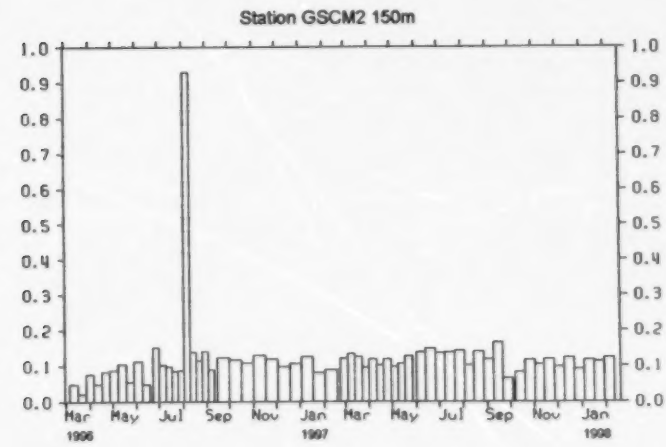




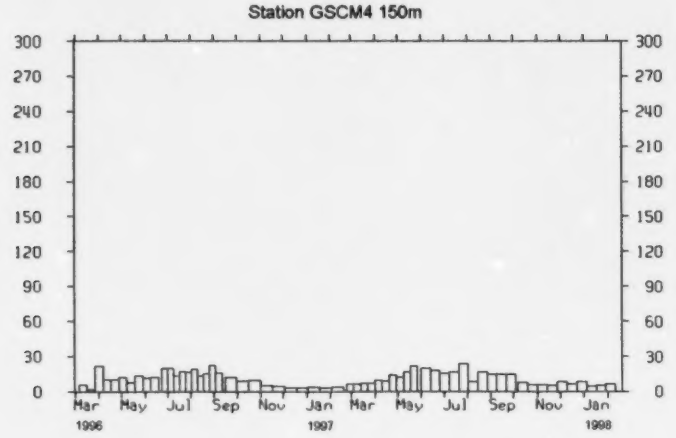
Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996, to February, 1998. Percent Carbonate Carbon

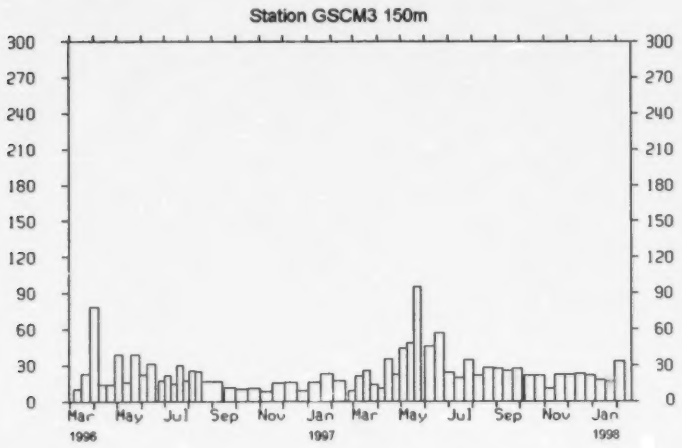


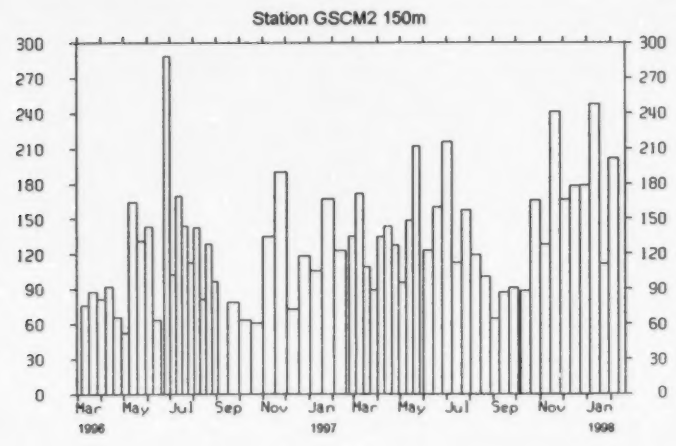




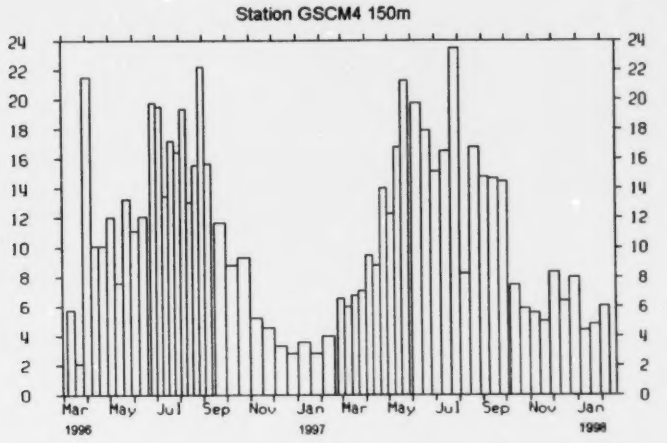
Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996, to February, 1998. Total Nitrogen Flux (mg N/m^2/day) – all plots on same scale.

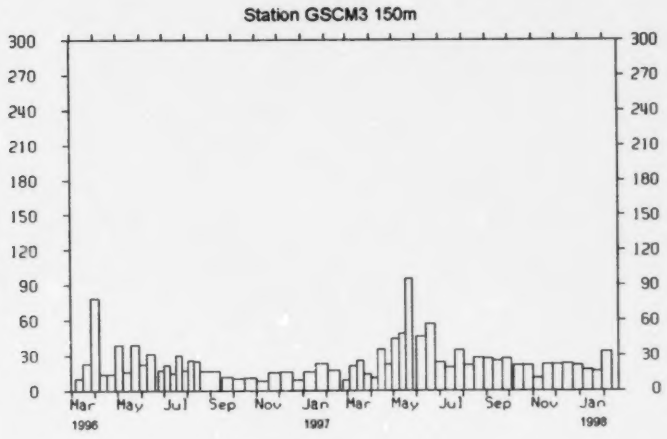


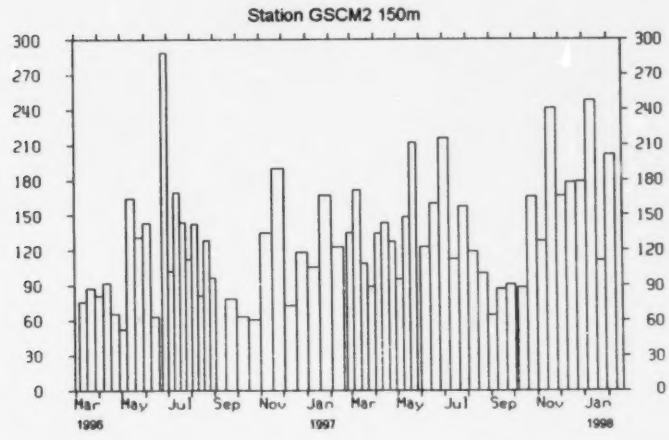




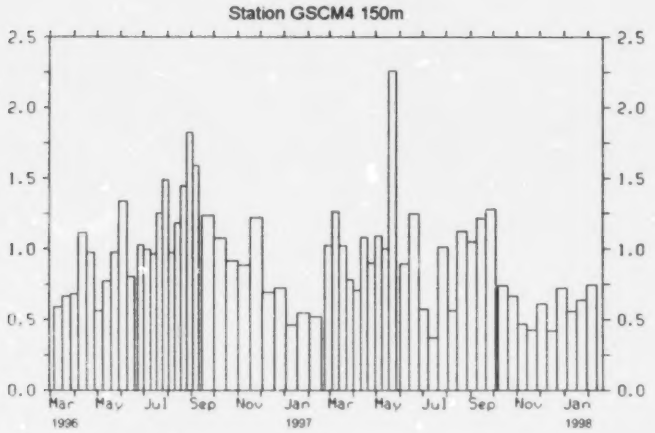
Appendix 4. Stations GSCM2, GSCM3, and GSCM4
March, 1996,to February, 1998
Total Nitrogen Flux (mg N/m^2/day) - plots on different scales.

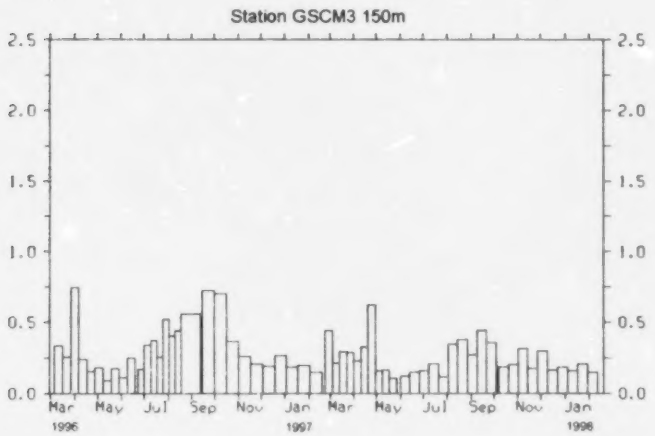


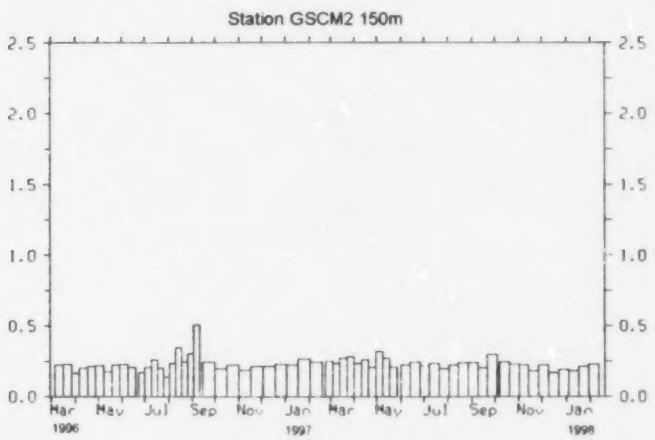




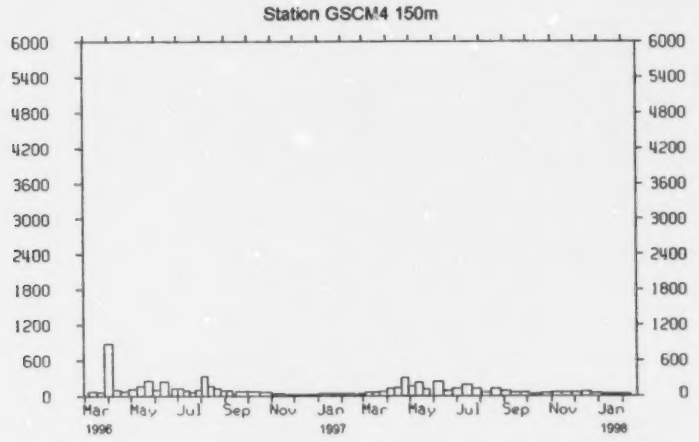
Appendix 4. Stations GSCM2, GSCM3, and GSCM4
March, 1996, to February, 1998
Percent Total Nitrogen

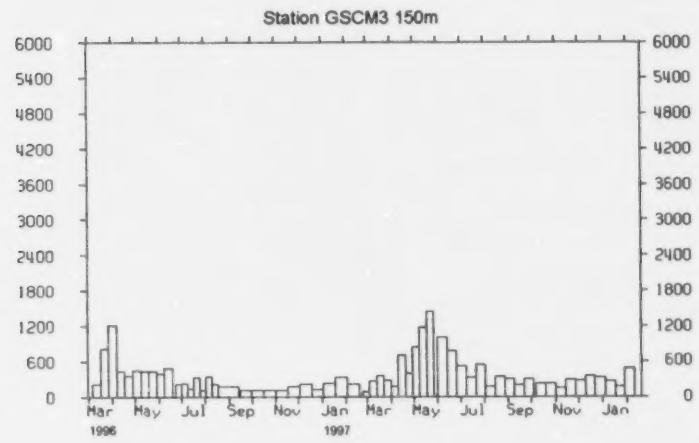


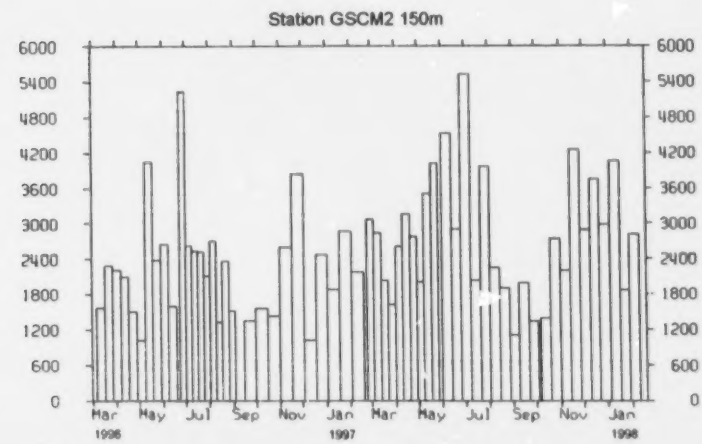




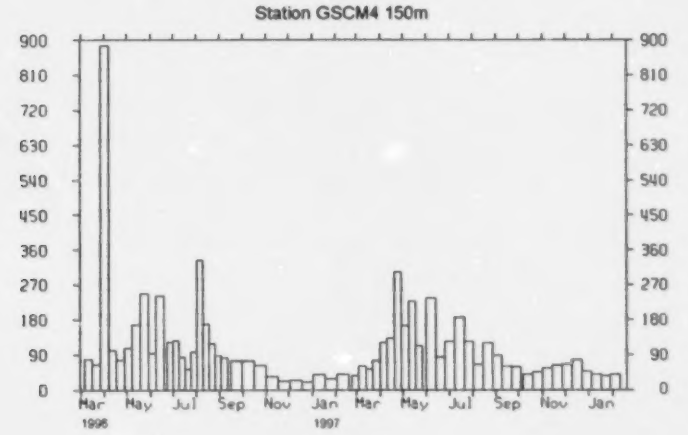
Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996, to February, 1998. Biogenic Silica Flux (mg Si/m^2/day) – all plots on same scale.

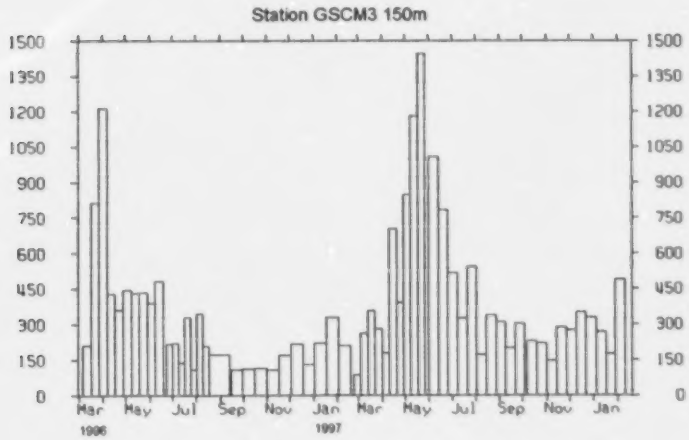


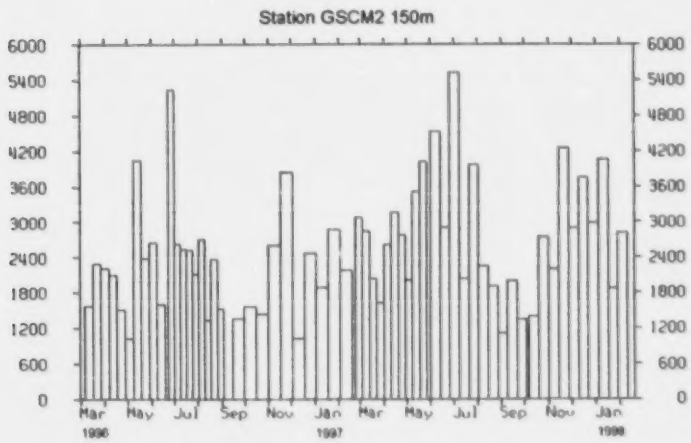




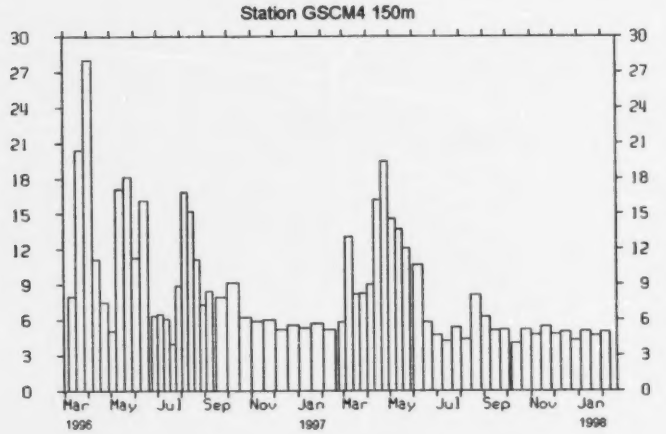
Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996, to February, 1998. Biogenic Silica Flux (mg Si/m^2/day) – plots on different scales.

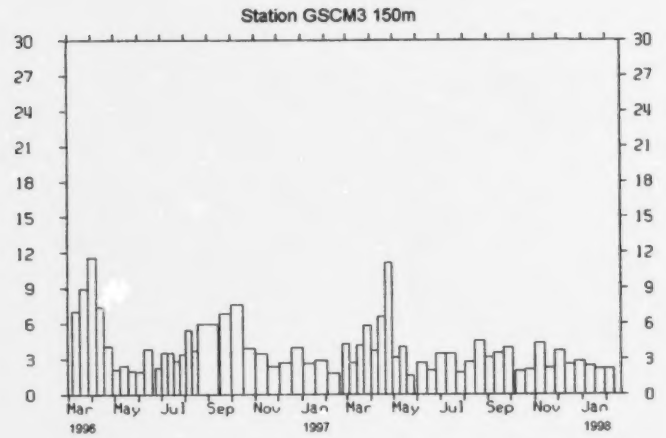


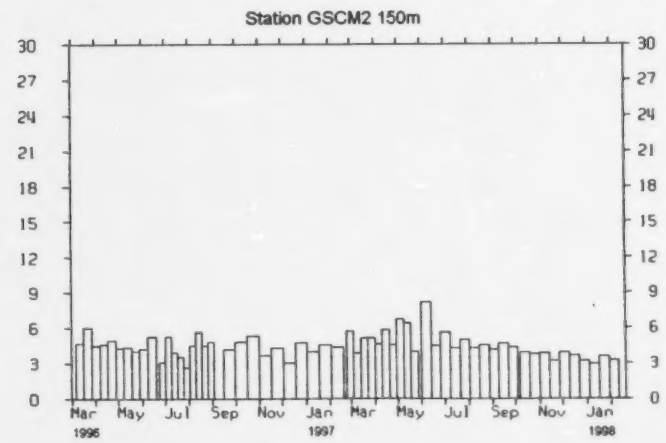




Appendix 4. Stations GSCM2, GSCM3, and GSCM4
March, 1996, to February, 1998
Percent Biogenic Silica (%Si)

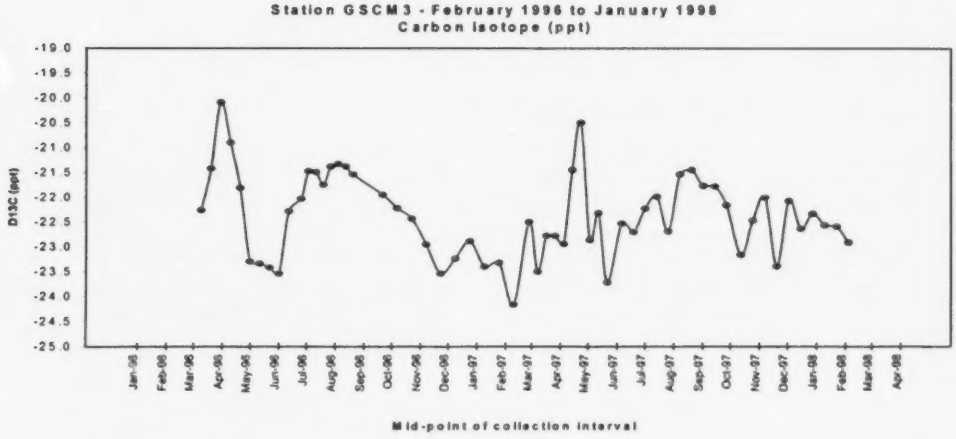






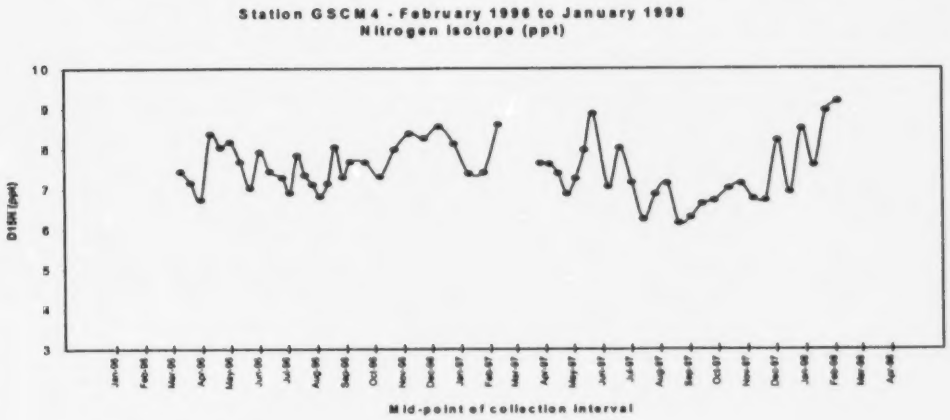
Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996, to February, 1998.

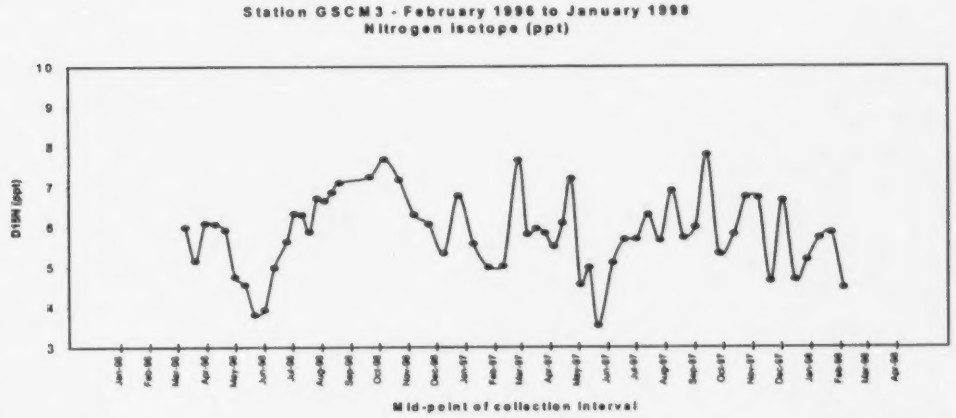
$\delta^{13}C_{organic}$ (ppt)



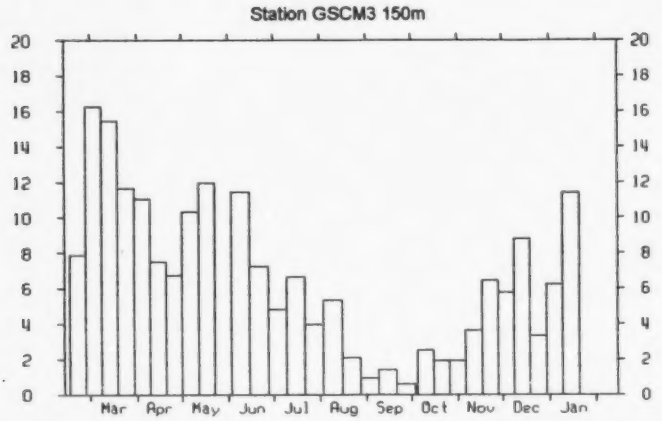
Appendix 4. Stations GSCM2, GSCM3, and GSCM4 March, 1996, to February, 1998.

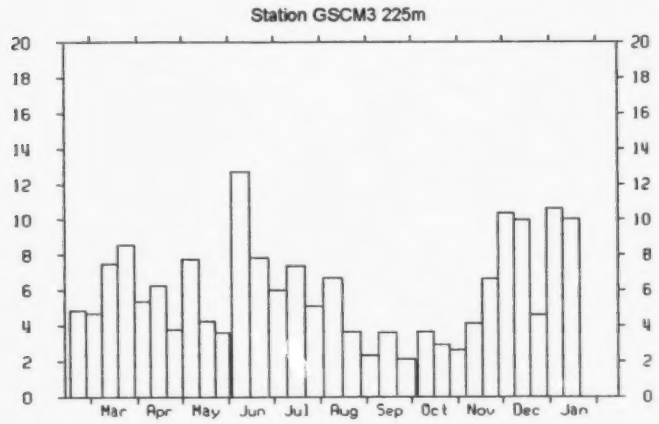
$\delta^{15}N_{total}$ (ppt)

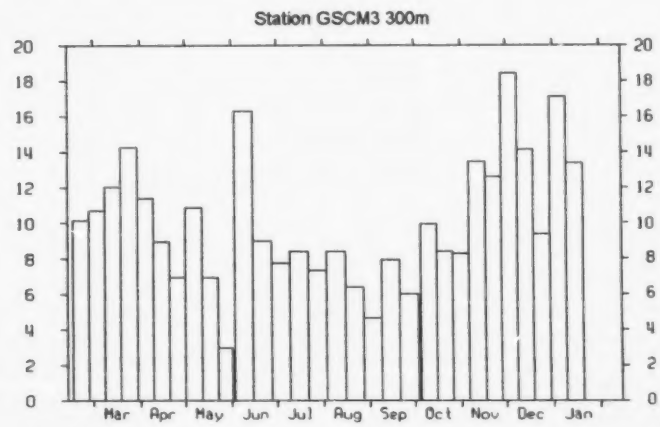




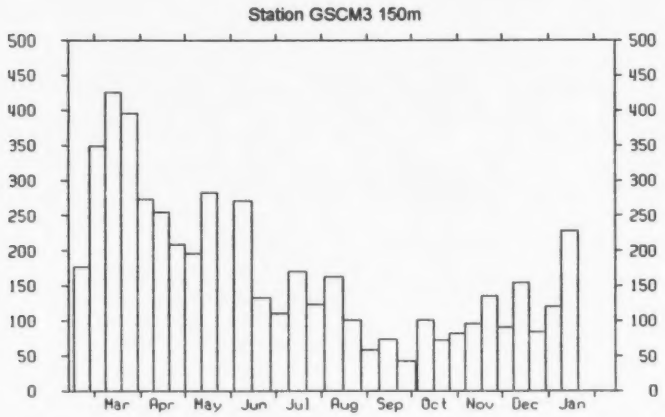
Appendix 5. Station GSCM3 – February, 1998 to January, 1999. Total flux (g/m^2/day)

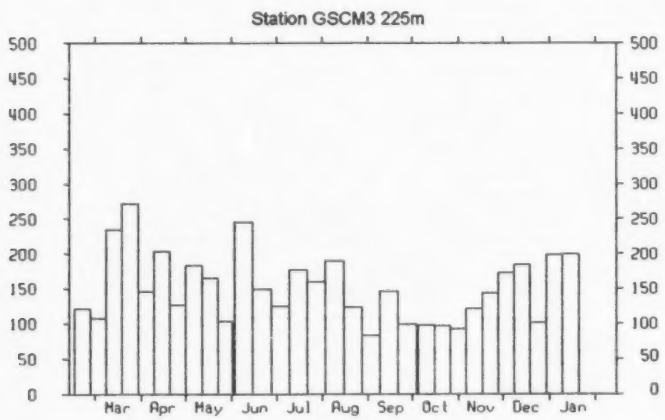


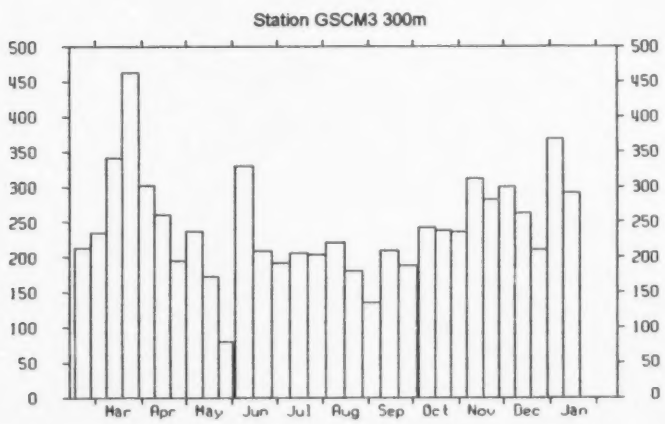




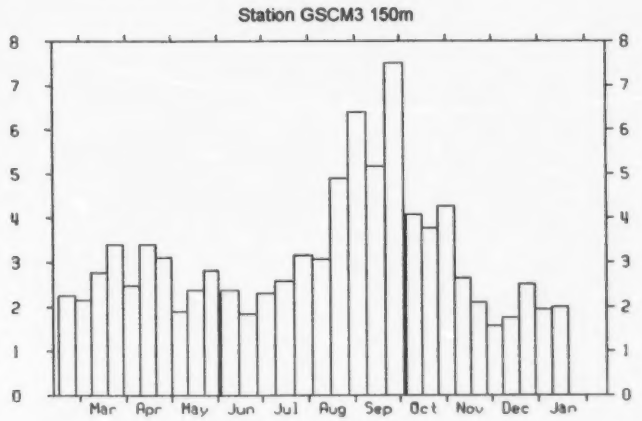
Appendix 5. Station GSCM3 – February, 1998, to January, 1999. Organic Carbon Flux (mg C/m^2/day)

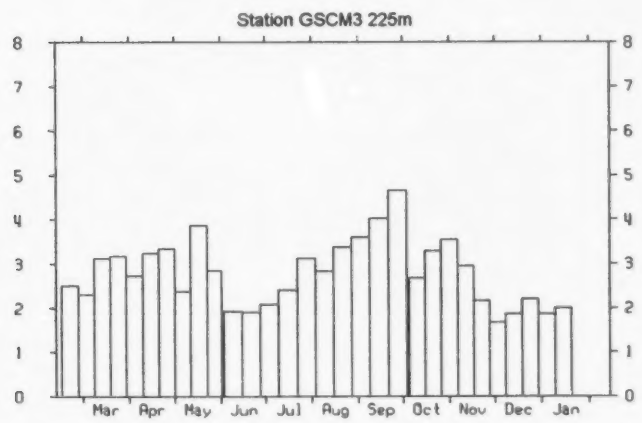


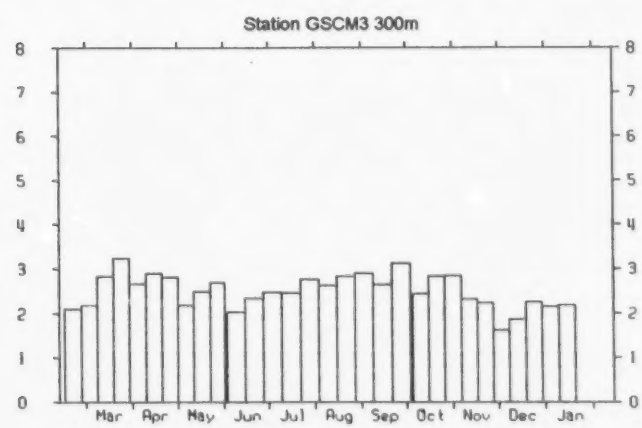




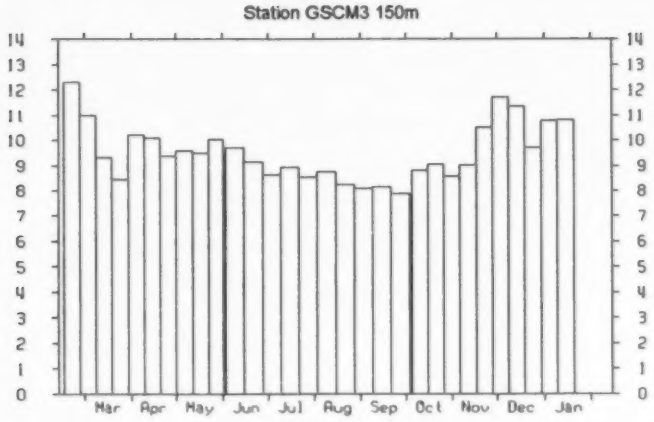
Appendix 5. Station GSCM3 – February, 1998, to January, 1999. Percent Organic Carbon

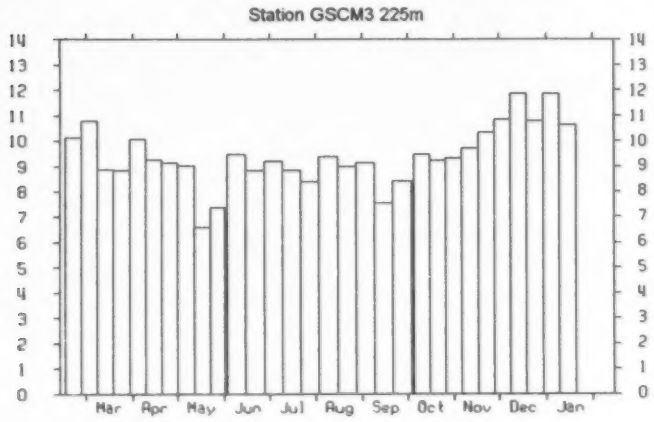


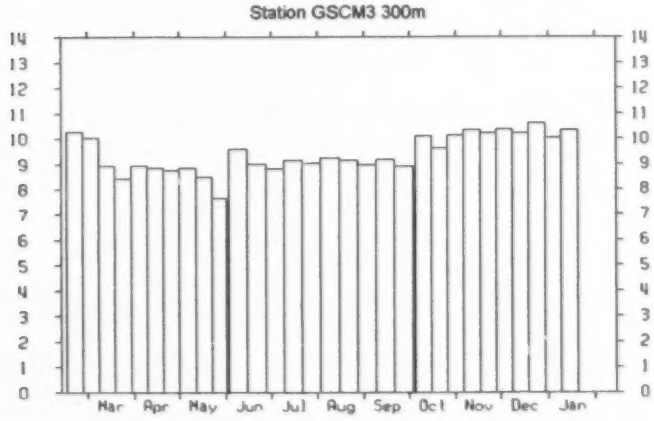




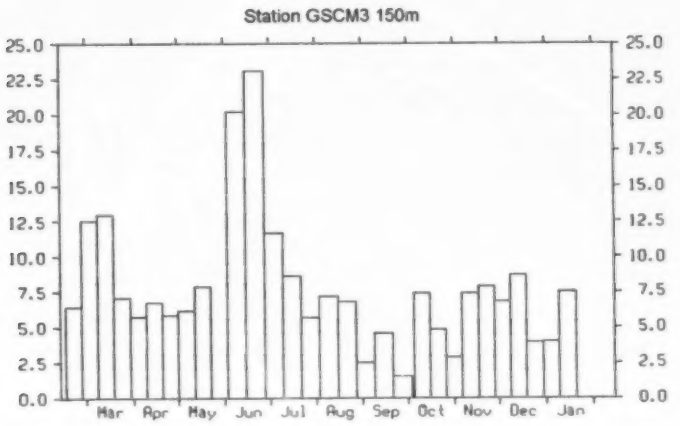
Appendix 5. Station GSCM3 – February, 1998, to January, 1999.
CN Ratio (atomic)

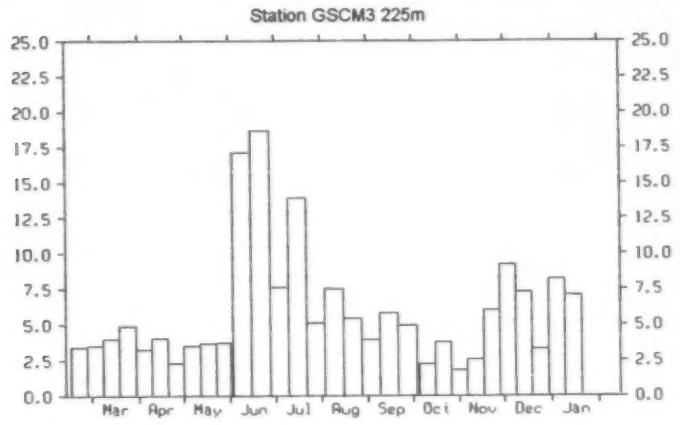


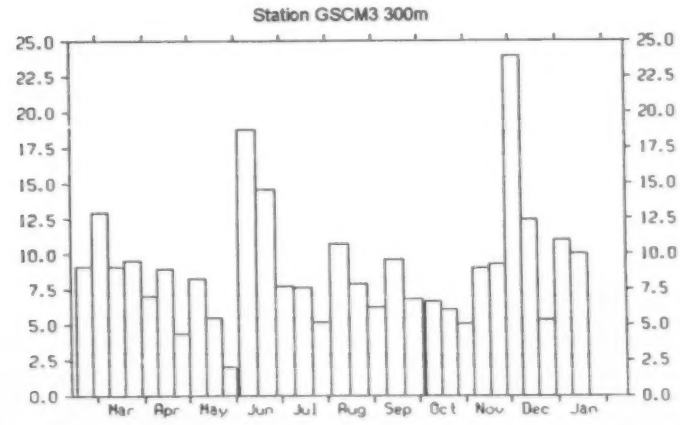




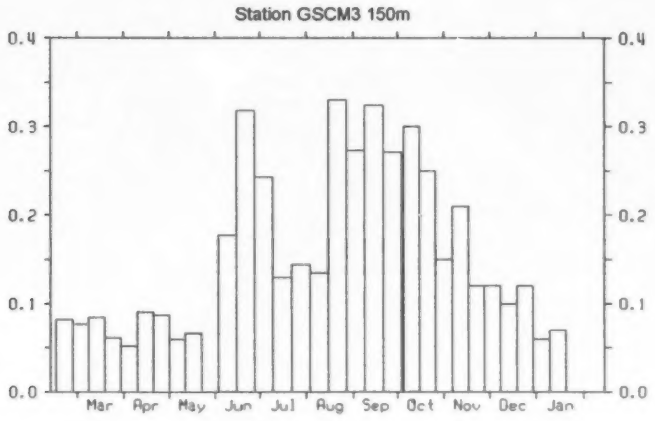
Appendix 5. Station GSCM3 – February, 1998, to January, 1999. Carbonate Carbon Flux (mg C/m^2/day)

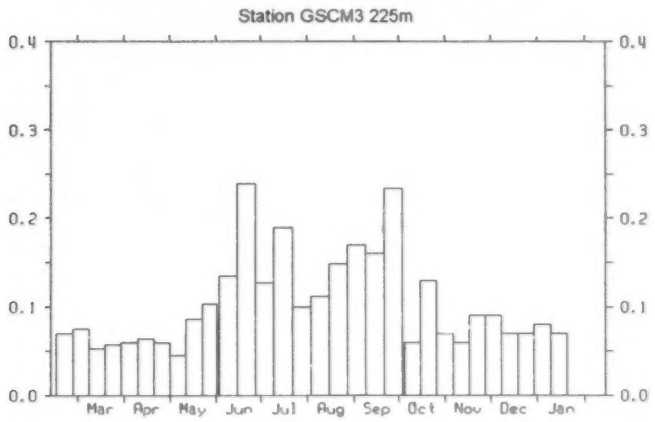


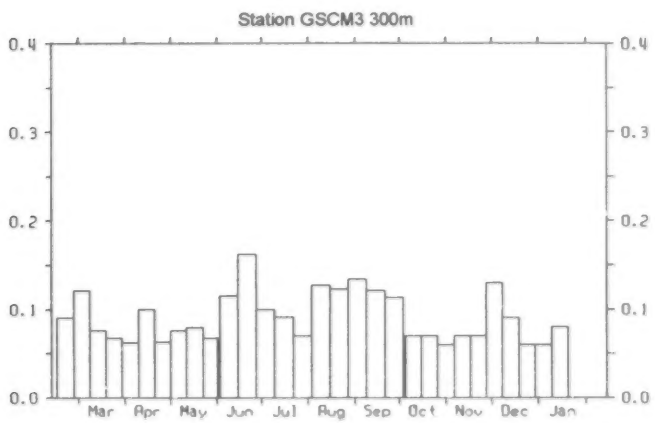




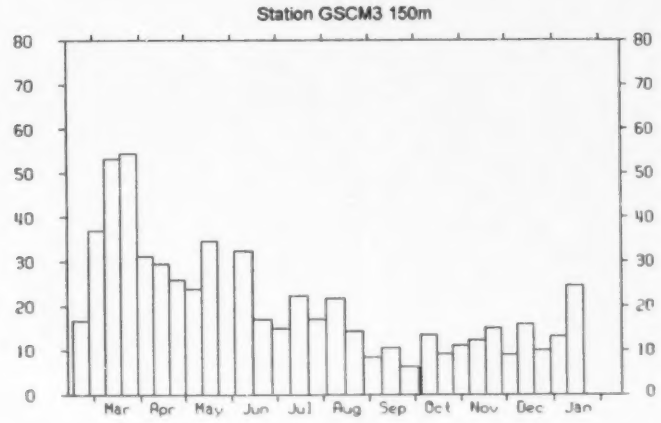
Appendix 5. Station GSCM3 – February, 1998, to January, 1999. Percent Carbonate Carbon (%C)

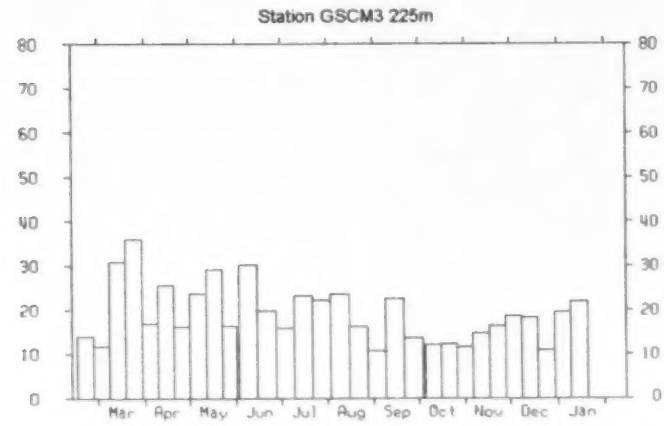


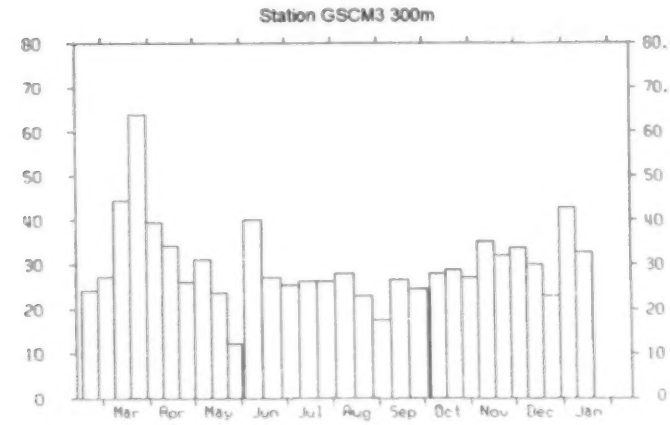




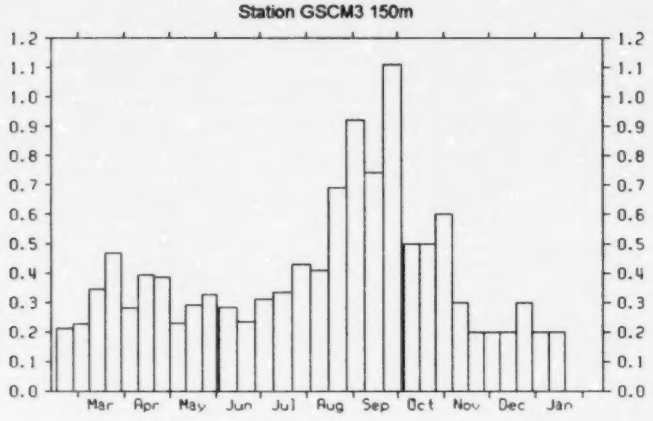
Appendix 5. Station GSCM3 – February, 1998, to January, 1999. Total Nitrogen Flux (mg N/m^2/day)

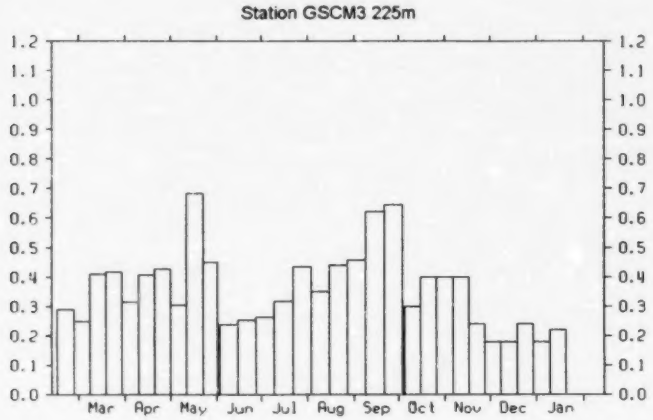


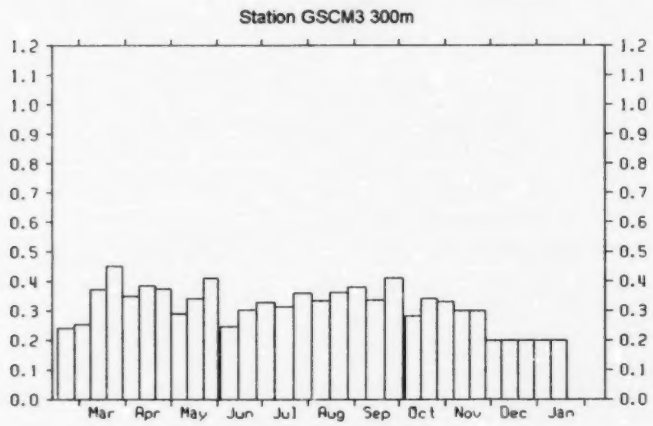




Appendix 5. Station GSCM3 – February, 1998, to January, 1999. Percent Total Nitrogen

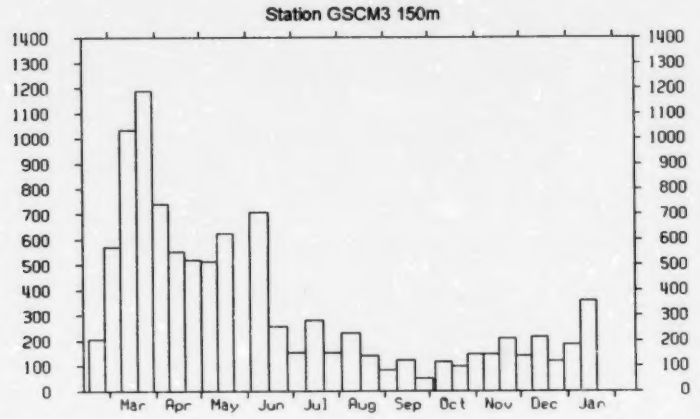


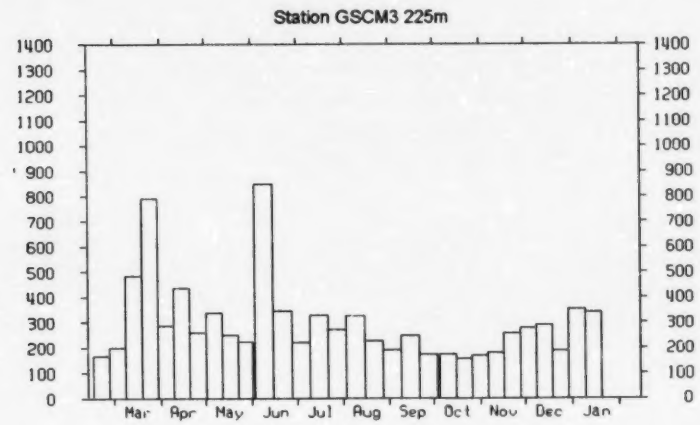


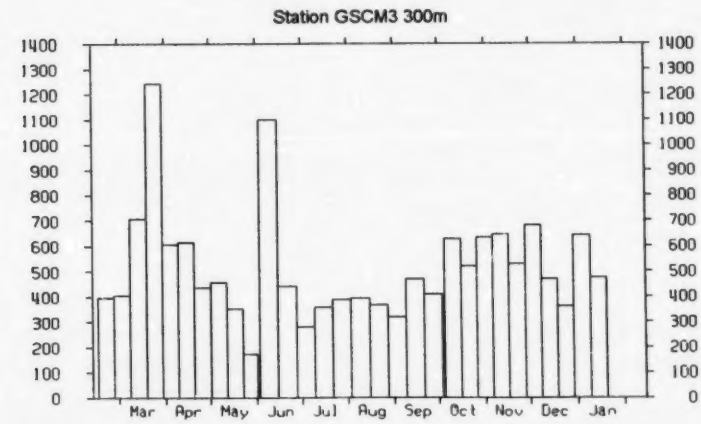


F2

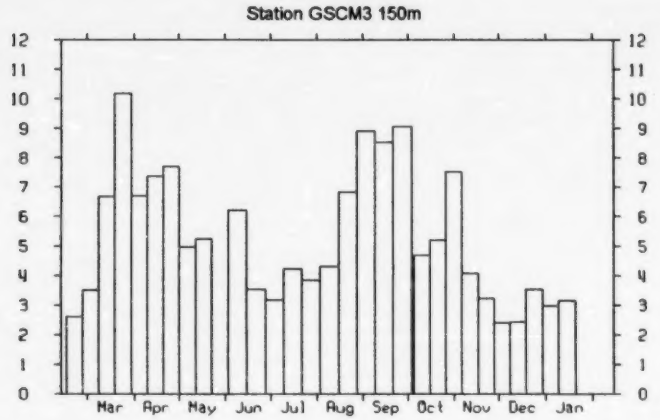
Appendix 5. Station GSCM3 – February, 1998 to January, 1999
Biogenic Silica Flux (mg Si/m^2/day)

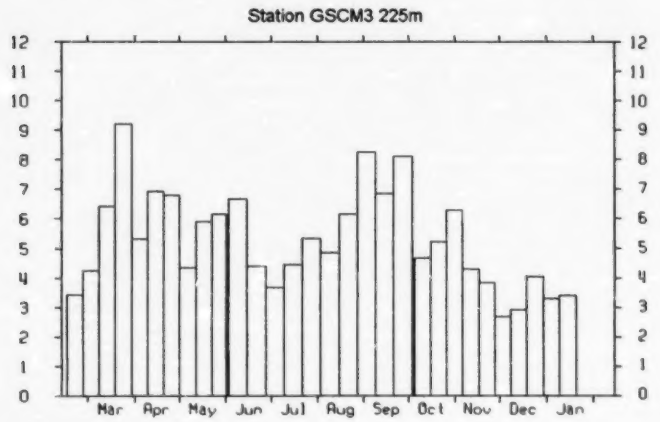


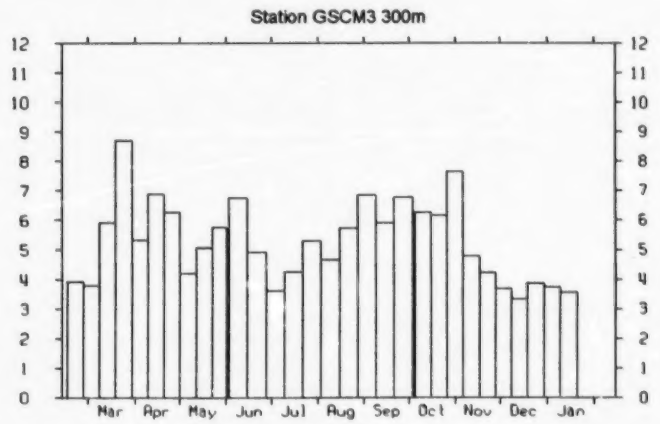




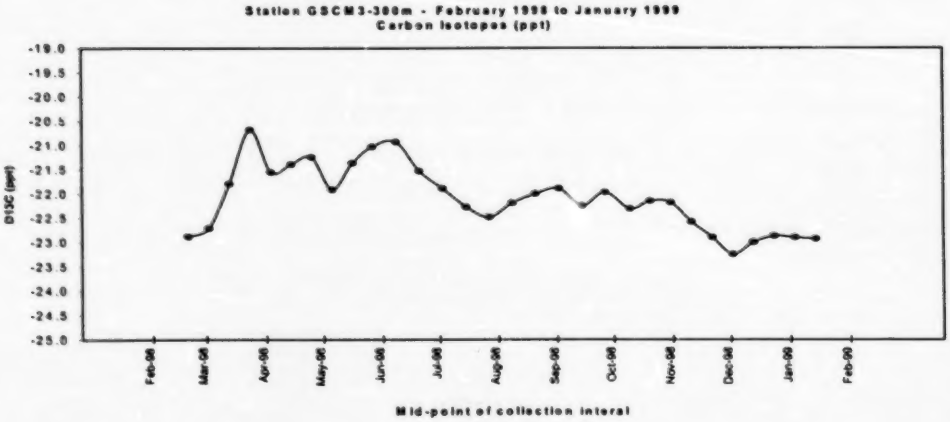
Appendix 5. Station GSCM3 – February, 1998, to January, 1999. Percent Biogenic Silica (%Si)







Appendix 5. Station GSCM3 (3 depths) – 1998 to 1999.
$\delta^{13}C_{organic}$ (ppt)



Appendix 5. Station GSCM3 (3 depths) – 1998 to 1999.
$\delta^{15}N_{total}$ (ppt)